

# **Message***Saver*

**Model MT5634MSV**

**Data/Fax/Voice Messaging Modem**

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**User Guide**

## **FCC Part 15**

This equipment has been tested and found to comply with the limits for a **Class B** digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Plug the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This device complies with Part 15 of the FCC rules. Operation of this device is subject to the following conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

**WARNING:** Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

## **Industry Canada**

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

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**User Guide**

## MessageSaver User Guide

Model MT5634MSV

P/N 88301250 Revision B (5/1/99)

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### Record of Revisions

<i>Revision</i>	<i>Date</i>	<i>Description</i>
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<b>B</b>	5/1/99	Updated agency information, installation procedures.
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### Notice

Though this modem is capable of 56K bps download performance, line impairments, public telephone infrastructure and other external technological factors currently prevent maximum 56K bps connections.

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**1**

***Introduction***

# Introduction

Congratulations on your purchase of a Multi-Tech MessageSaver! You have acquired one of the finest intelligent data/fax/voice messaging modems available today from one of America's oldest and most respected modem manufacturers. This owner's manual will help you install, configure, test and use your modem.

# Product Description

Unlike most modems, the MessageSaver can receive and store voice and fax messages when your computer is off or the bundled communication software is not running, making it the ideal modem for the small office or home office. The MessageSaver is fully compatible with Windows 3.1, Windows 95, Windows 98, and Windows NT. Using the included software, you can retrieve stored messages, faxes, and telephone numbers (telephone number retrieval requires Caller ID service), retrieve configuration and systems messages, and print a received fax.

The MessageSaver supports both the K56flex™ and the ITU-T V.90 protocols, both of which enable Internet connections at data rates up to 56K bps\* over standard telephone lines. Using these protocols, Internet service providers (ISPs) are able to send data downstream to your computer at high speeds because data on the telephone network typically is converted from digital to analog only once before it reaches your modem. Upstream transmissions, and transmissions between client modems, are limited to data rates of 33.6K bps, as are downstream transmissions that are converted more than once on the telephone network.

The MessageSaver is Plug and Play-capable. It offers interactive automatic dialing and command mode configuration. It stores up to three telephone numbers or command strings of up to 40 characters each in nonvolatile memory. The modem pulse- or tone-dials, and it recognizes dial tones and busy signals for reliable call-progress detection. It also has AT&T calling card tone detection, DTR dialing, Caller ID (if you have a Caller ID subscription from your telephone company), and incorporates self-resetting lightning protection. Serial port speeds can be set to 230,400 bps. The MessageSaver is a full-duplex intelligent modem with V.42 error correction; V.42bis data compression; and V.17 (14,400 bps), Class 1 and 2, and Group 3 fax capabilities. It is FCC-registered for connection without notification to the telephone company.

\*Though this modem is capable of 56K bps download performance, line impairments, public telephone infrastructure, and other external technological factors currently prevent maximum 56K bps connections.

## What Is in Your Modem Package?

Your modem package has several components. Please make sure you have them all before trying to operate your modem. Your package should include:

- A MessageSaver modem
- A DC power supply
- A set of four plastic feet
- A modular telephone cable
- A printed *Quick Start Guide*
- An installation disk
- A compact disc containing PhoneTools data, fax, voice, and messaging software, the *MessageSaver User Guide*, and other programs

If any of these items are missing, please contact Multi-Tech Systems or your dealer/distributor (see Appendix D for information on contacting Multi-Tech via telephone, fax, bulletin board service, CompuServe, and the Internet).

## How to Get a Copy of Your User Guide

The Multi-Tech Web site always has the latest version of the *MessageSaver User Guide* in Adobe Acrobat format. You can download it at no charge from <http://www.multitech.com/support/manuals/>.

To view or print the *User Guide* you must have a copy of Adobe Acrobat Reader 3.0 or higher installed on your computer. You can download a free copy of Adobe Acrobat Reader from either the Adobe Web site at <http://www.adobe.com/prodindex/acrobat/readstep.html> or the Multi-Tech Web site at <http://www.multitech.com/support/manuals/>.

## Related Manuals

The following manuals are available from the Multi-Tech World Wide Web and FTP sites.

- 82039200 *Voice +V Commands Developer's Kit*  
<http://www.multitech.com/support/manuals/82039200.pdf>
- 82076200 *MT56XX Fax Class 1 Developer's Guide*  
<ftp://ftp.multitech.com/manuals/pdf/developers%20kits/5600fax.pdf>
- 82006502 *Fax Class 2 Developers's Kit*  
<ftp://ftp.multitech.com/manuals/pdf/developers%20kits/82006502.pdf>





**2**

***Quick Start***

# Introduction

We know you are eager to get your MessageSaver up and running, so we'll show you step-by-step how to set it up, check it out, and make your first calls.

## What You Will Need

Before starting, please make sure you have everything you need:

### *We supply*

- ✓ A MessageSaver data/fax/voice messaging modem
- ✓ A DC power supply module
- ✓ A set of four plastic feet
- ✓ A modular telephone cable
- ✓ An MT5634MSV setup disk
- ✓ A *Quick Start Guide*
- ✓ A compact disc containing PhoneTools data, fax, voice, and messaging software, the *MessageSaver User Guide*, and other programs

### *You supply*

- ✓ A computer with an unused serial port
- ✓ A shielded RS-232 serial cable with a male DB-25 connector on one end and a connector to match your computer's serial port on the other end
- ✓ A nearby AC power outlet
- ✓ A nearby telephone line jack
- ✓ An optional PC stereo microphone
- ✓ An optional headset, amplified speaker, or sound card with speakers
- ✓ For connecting to a sound card, an optional male-to-male stereo patch cord with 1/8-inch mini plugs

## Safety Warnings

- Use this product only with UL- and CUL-listed computers.
- To reduce the risk of fire, use only 26 AWG or larger telephone wiring.
- Never install telephone wiring during a lightning storm.
- Never install a telephone jack in a wet location unless the jack is specifically designed for wet locations.
- Never touch uninsulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.
- Use caution when installing or modifying telephone lines.
- Avoid using a telephone (other than a cordless type) during an electrical storm; there is a risk of electrical shock from lightning.
- Do not use a telephone in the vicinity of a gas leak.

## Step 1: Mount the Feet

The modem comes with a strip of self-adhesive plastic feet, which you can optionally mount on the bottom of the modem. To install the feet, simply peel them from their paper strip and press them into the recesses on the bottom of the modem.

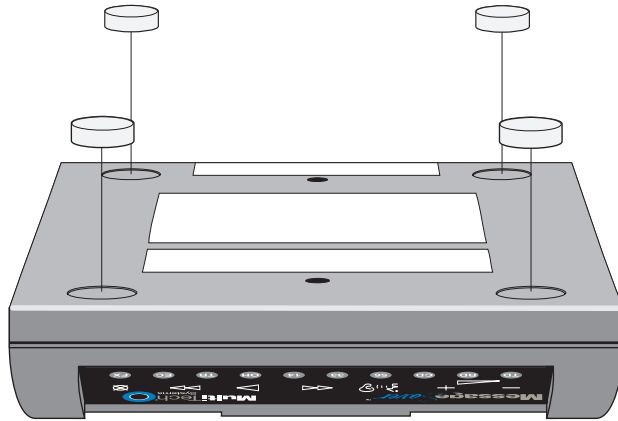


Figure 2-1. Mounting the feet.

## Step 2: Select Stereo or Mono Speaker

If you want to connect a monophonic external speaker to the MessageSaver, you must open the modem case and change a jumper. If you want to connect a stereo external speaker or sound card, or to have no external sound connection at all, you may skip this step and proceed to Step 3.

---

**Caution:** The circuit board can be harmed by static electricity. Before you open the case, touch a grounded object such as a water faucet to discharge any static electricity in your body, then touch the metal shell of the modem's RS232 connector to ensure that there is no voltage difference between you and the modem.

---

**Warning:** The following procedure must be performed by authorized service personnel.

---

### *Opening the Modem*

1. If the modem is connected, turn it off and remove all connecting cables, including power and line cables.
2. Turn the modem over.
3. On the bottom of the modem are two screws that hold the case together. Remove both screws and set them aside.
4. Turn the modem over again.
5. Remove the top part of the modem case.
6. To close the modem, reverse steps 1–5.

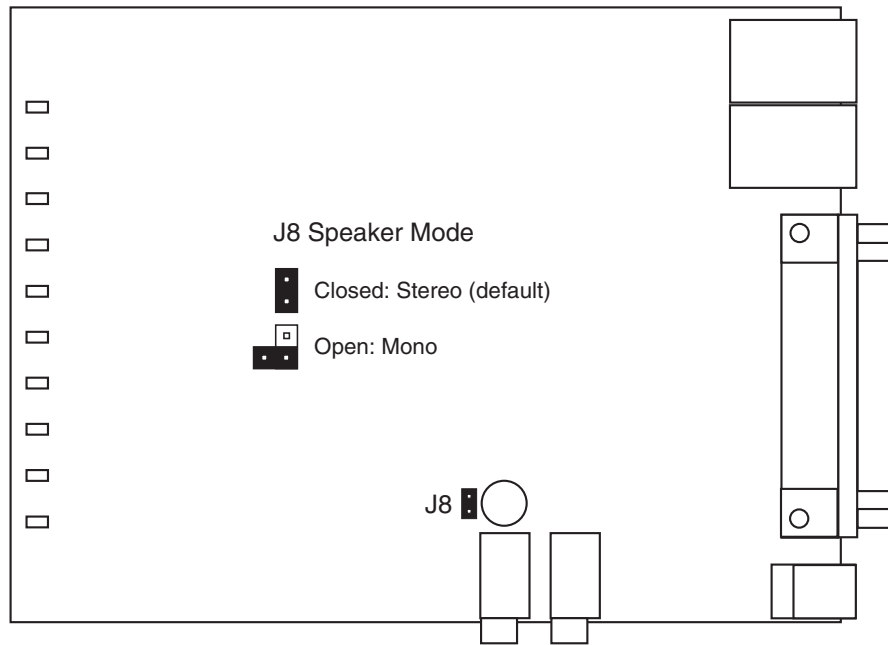


Figure 2-2. Location of speaker jumper.

### ***Changing the Speaker Jumper***

The speaker jumper (J8) is next to the external speaker jack (see Figure 2-2).

- To use the MessageSaver with a monophonic external speaker, remove the jumper plug from the J8 jumper pins. You can store it by placing it on one jumper pin.
- To use the MessageSaver with a stereo speaker or sound card, place the jumper plug on both pins of the J8 jumper. This is the factory default position.



## Step 3: Connect the Modem to Your System

Placing the modem in a convenient location, connect it to your computer's serial port, to the telephone line, to AC power, and, optionally, to your telephone. You can also optionally connect it to a microphone and a speaker or sound card.

---

**Note:** Do not connect the modem to power until you have made all other connections.

---

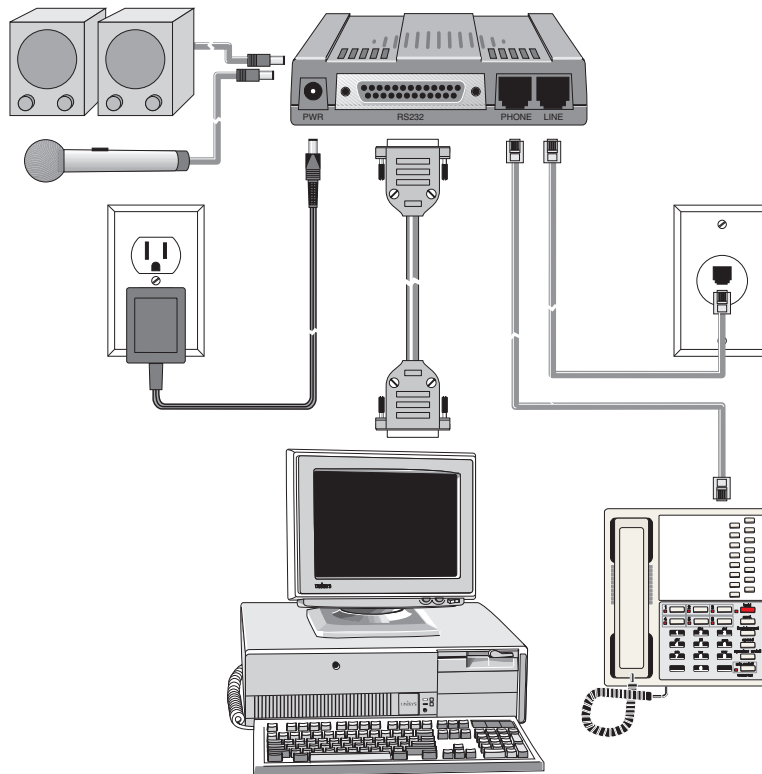


Figure 2-3. Modem connections.

### **RS232 Connection**

Plug one end of the serial cable into the RS232 connector on the modem, and the other end into a serial port connector on your computer, such as COM1 or COM2.

### **Line Connection**

Plug one end of the phone cable into the modem's LINE jack, and the other end into a phone line wall jack.

---

**Note:** The LINE jack is not interchangeable with the PHONE jack. Do not plug the phone into the LINE jack or the line cable into the PHONE jack.

---

---

**Note:** The Federal Communications Commission (FCC), Industry Canada, and the British Approvals Board for Telecommunications (BABT) impose certain restrictions on equipment connected to public telephone systems. See Appendix A for more information.

---

### **Phone Connection**

For voice-only calls, you can optionally plug a telephone into the modem's PHONE jack.

### **Microphone Connection**

You can optionally plug an unamplified microphone into the MIC jack. The microphone should have a 1/8-inch mini plug. However, this is not necessary for normal operation, because the MessageSaver has a built-in microphone for hands-free speakerphone operation.

### **Speaker Connection**

You can optionally use a 1/8-inch-plug male-to-male stereo patch cord to connect the SPKR jack on the side of the modem to the LINE IN jack on your sound card. If you do not have a sound card, you can optionally plug an amplified speaker directly into the SPKR jack.

### **Power Connection**

After you have made all other connections, plug the power supply module into an AC power outlet or power strip, and then plug the power supply's cable into the PWR jack on the modem.

To be able to receive messages at any time, the MessageSaver is always on when it is plugged in. Do not plug it into the same power strip as the computer, if you use the power strip switch to turn your computer on and off.

---

**Caution:** Use only the power supply supplied with the modem. Use of any other power supply will void the warranty and could damage the modem.

---

### **Power-On Test**

When you apply power, the modem performs a diagnostic self-test, indicated by several indicators flashing for a second or two, after which the 56 indicator lights. If this does not happen, check that the power supply is solidly connected and the AC outlet is live. If these measures do not work, see Chapter 6, "Solving Problems."

---

**Note:** The MessageSaver is not ready to operate until about 10 seconds after power is applied. Do not attempt to use it until then.

---

## Step 4: Install the Modem in Windows

If you use Windows 95, Windows 98, or Windows NT 4.0, you must install the modem in the operating system. (If you use Windows 3.1 or another operating system, go to Step 5.)

### *Adding the Modem to Windows*

1. Make sure your modem is connected properly, then turn on your computer. Windows should detect your new modem and open the **Install New Modem** wizard.

---

**Note:** If Windows cannot detect your modem, your modem may be unplugged, it may be plugged into the wrong connector on your computer, or the serial cable may be faulty. See “None of the LEDs Light When the Modem Is Turned On” and “The Modem Does Not Respond to Commands” in Chapter 6, “Solving Problems.”

---

2. In the **Install New Modem** wizard, select **Don't detect my modem; I will select it from a list**, and then click **Next**. A dialog box with a list of manufacturers and a list of modem models appears.
3. Insert the MT5634MSV setup disk into your floppy drive, and click **Have Disk**.
4. In the **Install from Disk** dialog box, select the drive the installation disk is in and click **OK**.
5. A list of modems appears. Select your modem from the list, and then click **Next**.
6. Select the port the modem is connected to, and then click **Next**.
7. Windows installs and configures the modem.
8. Click **Finish** to exit.

### *Removing Your Old Modem from Windows*

When your new modem replaces another modem, the old modem installation remains in Windows after you install the new modem, and the old modem is still selected in HyperTerminal and other Windows applications. Although you can change the application connection descriptions one at a time, it is easier to force Windows applications to use the new modem by removing the old modem from Windows.

1. Click the **Start** button, point to **Settings**, and click **Control Panel**.
2. Double-click the Modems icon to open the **Modems Properties** dialog box.
3. In the list box, select the old modem.
4. Click **Remove**, then click **Close**.
5. The next time you dial a HyperTerminal connection, it will select your new modem and ask you to confirm the selection.

## Step 5: Install and Configure Your Software

You must have communication software installed in your computer to use the MessageSaver. If you wish to use communication software that is already installed, you should reconfigure it for your new modem; otherwise, install the PhoneTools program provided with the modem. PhoneTools must be installed if you want the MessageSaver to store incoming voice messages and faxes. (See Chapter 7.)

1. Turn on your computer and run your communication software.
2. Find the dialog box or menu that lets you select your modem. (In Windows Terminal select **Settings | Modem Commands**; in HyperTerminal select **File | Properties | Phone Number**; and in PhoneTools select **Configure | Hardware Configuration | Select Modem**.)
3. Choose your modem from the software's modem list. If it isn't listed, choose a generic modem and modify the settings as necessary.
4. Change the modem initialization string, if necessary. The factory default configuration works well for most purposes. To load the factory default configuration, use **AT&F**. To load a custom configuration that was saved using the **&W** command, use **ATZ**. Note that the **Z** command must be in a command string by itself. For a Macintosh, the initialization string should include the **&D0** command. If you do not want the modem to always answer the phone, add **S0=0** to the string. To use Caller ID with the modem, add **S0=2** to the string (Caller ID information is sent between the first and second rings, so the phone must ring at least twice before the modem picks up the line). Depending on the software, you might have to end the string with a carriage return character (^M).

---

**Note:** To change the modem's default configuration, type new commands in the software's terminal window, adding the **&W** command to store them in the modem's nonvolatile memory. For instance, to create a default configuration for a Macintosh computer that turns off autoanswer, type **AT&F&D0S0=0&W**. The new configuration loads automatically whenever the modem is turned on or receives the **ATZ** command.

---

5. Select the port the modem is connected to (normally COM1 or COM2).
6. Select your serial port speed. This can be labeled "maximum speed," "DTE bps," or "baud rate." Ideally, if you use data compression, you should set your serial port baud rate to four times the modem's maximum transmission speed or faster; however, few files can be compressed enough to require speeds that high, and not all serial ports can handle speeds that high. Set the serial port baud rate to 115,200 bps if your computer has a high speed serial port with a 16550AFN UART or equivalent and Windows 95 or NT 4.0, or set it to 57,600 bps if it has Windows 3.1x. If you have an older computer with a 14550 UART, set it to 19,200 bps. Older Macintosh computers can use a serial port baud rate of 57,600 bps; newer ones can use a serial port baud rate of 115,200 bps or 230,400 bps.

To see what UART your serial port uses if you have Windows 3.1x, in Program Manager select **File | Run**, type **MSD**, and press ENTER. Select **COM Ports** to see the UART type. If you have Windows 95 or 98, select **Start | Settings | Control Panel**, and double-click on the Modems icon. In the **Modems Properties** dialog box, click the **Diagnostics** tab, click the port the modem is connected to, and click **More Info** to see the UART type. Note that both programs will identify

a 14550 UART as an 8250A UART. If you have an 80386 or later computer, your UART is most likely a 14550 or 16550AFN.

7. If the software has an autobaud selection, make sure it is disabled. Autobaud applies only to older modems, and can cause problems if enabled.
8. If the software allows you to edit the no-connect messages (*NO CARRIER*, *BUSY*, *NO ANSWER*, *NO DIALTONE*), make sure there is no space between *DIAL* and *TONE* in *NO DIALTONE*.
9. Refer to the software manual or online help for other configuration choices; in most cases you can accept the default values.

## Step 6: Call the Multi-Tech BBS

Test the modem's data functions by calling the Multi-Tech bulletin board system (BBS) and downloading REGISTER.DOC, if you have Microsoft Word 6.0 or later, or REGISTER.TXT if you do not.

### PhoneTools

1. Click **Start**; then choose **Programs**, **PhoneTools**, and **PhoneTools**. The PhoneTools main window appears.
2. Click **Menus**, then click **Phonebook**. The **Phone Book** dialog box appears.
3. In the **Name** line in the **Record** window, type **Multi-Tech BBS**.
4. In the **Modem** line, type **800-392-2432** if you are in North America. Type **612-785-3702** if you are a local or an international user.
5. Click the **Save New Record** button and close the dialog box.
6. In the PhoneTools main window, click **Terminal**, then click the Phonebook button. The **Copy from Phone Book** dialog box appears.
7. Double-click the **Multi-Tech BBS** entry. The **Terminal connection** dialog box appears with the dialing information for the Multi-Tech BBS filled in.
8. Make any necessary changes to the dialing options and then click **OK**. PhoneTools dials the Multi-Tech BBS. You will know you have reached a modem by the harsh sounds of the modem handshake.
9. When the BBS welcome screen appears in the **Terminal** window, type your first name, last name, and password following the prompts. If you are a first-time caller, the BBS asks if your name is spelled correctly. If you answer **Y**, a questionnaire appears. You must complete the questionnaire to use the BBS on your first call.
10. Press ENTER until the Main Menu appears. From the Main Menu you have access to two areas: the Files Menu and News. For help with menu commands, type **?**.
11. In the Main Menu, type **F** and press ENTER to access the Files Menu, then type **D** and press ENTER to download.
12. At the prompt, if you have Microsoft Word 6.0 or later, type **register.doc** and press ENTER twice. If you do not have Microsoft Word, type **register.txt** and press ENTER twice.

13. Type **Z** and press ENTER to select the Zmodem transfer protocol.
14. The download begins automatically. As the file is copied to the download folder selected in the **Configuration** dialog box of the **Terminal** window, a dialog box reports on the progress of the download. If the download fails, your baud rate may be set too high. Log off, set the COM port baud rate lower, and call again.
15. To log off the BBS, press ENTER, type **G** for "good-bye," and press ENTER twice more.

### Windows HyperTerminal

1. Click **Start**; then choose **Programs, Accessories, and HyperTerminal**.
2. Start HyperTerminal by double-clicking on the Hypertrm icon. HyperTerminal asks for the name of the connection.
3. Type **Multi-Tech BBS** in the **Name** box and click **OK**.
4. In North America, type **800** in the **Area code** box and **392-2432** in the **Phone number** box. Local and international users, type **612** in the **Area code** box and **785-3702** in the **Phone number** box.
5. Verify that your modem is selected in the **Connect using** box, then click **OK**.
6. In the **Connect** dialog box, click **Dialing Properties**.
7. Make any necessary changes in the **Where I am** and the **How I dial from this location** boxes. If you must dial 9 to access an outside line, you should type 9 in both the local and the long distance boxes unless your phone system has a special requirement.
8. Click **OK**, then click **Dial**. You will know you have reached a modem by the harsh sounds of the modem handshake.
9. When the BBS welcome screen appears in the HyperTerminal window, type your first name, last name, and password following the prompts. If you are a first-time caller, the BBS asks if your name is spelled correctly. If you answer **Y**, a questionnaire appears. You must complete the questionnaire to use the BBS on your first call.
10. Press ENTER until the Main Menu appears. From the Main Menu you have access to two areas: the Files Menu and News. For help with menu commands, type **?**.
11. In the Main Menu, type **F** and press ENTER to access the Files Menu, then type **D** and press ENTER to download.
12. At the prompt, if you have Microsoft Word 6.0 or later, type **register.doc** and press ENTER twice. If you do not have Microsoft Word, type **register.txt** and press ENTER twice.
13. Type **Z** and press ENTER to select the Zmodem transfer protocol.
14. The download begins automatically. As the file is copied to the HyperTerminal folder, a dialog box reports on the progress of the download. If the download fails, your baud rate may be set too high. Log off, set the COM port baud rate lower, and call again.
15. To log off the BBS, press ENTER, type **G** for "good-bye," and press ENTER twice more.

16. In the HyperTerminal window, click **File**, then click **Save** to save the HyperTerminal connection description.

## **Windows Terminal**

1. Open the Accessories program group and double-click on the Terminal icon.
2. Select the **Settings** menu and make the following changes:

*Phone Number:* Type **1-800-392-2432** if you are in North America, or type an overseas access code and **612-785-3702** if you are outside North America.

*Communications:* Select the COM port the modem is connected to and change the following: **Baud rate** to **19200**; **Flow control** to **Hardware**; and **Carrier Detect** to **checked**.

*Modem Commands:* Select **MultiTech**. If you must dial 9 to get an outside line, type **ATDT9**, in the **Dial prefix** box (include the comma).
3. Click **File**, then click **Save**, and save as **multibbs.trm**.
4. Click **Phone**, then click **Dial** to dial the BBS. You will know you have reached a modem by the harsh sounds of the modem handshake.
5. When the BBS welcome screen appears in the HyperTerminal window, type your first name, last name, and password following the prompts. If you are a first-time caller, the BBS asks if your name is spelled correctly. If you answer **Y**, a questionnaire appears. You must complete the questionnaire to use the BBS on your first call.
6. Press ENTER until the Main Menu appears. From the Main Menu you have access to two areas: the Files Menu and News. For help with menu commands, type **?**.
7. In the Main Menu, type **F** and press ENTER to access the Files Menu, then type **D** and press ENTER to download.
8. At the prompt, if you have Microsoft Word 6.0 or later, type **register.doc** and press ENTER twice. If you do not have Microsoft Word, type **register.txt** and press ENTER twice.
9. Type **X** and press ENTER to select the Xmodem transfer protocol.
10. To begin the download in Terminal, click **Transfers**, then click **Receive binary file**. Next, select the destination directory, type the file name (**register.doc** or **register.txt**), and click **OK**. If the download fails, your baud rate may be set too high. Log off, set the COM port baud rate lower, and call again.
11. To log off the BBS, press ENTER, type **G** for "good-bye," then press ENTER twice again.

## **Step 7: Send a Fax**

To test your modem's fax capabilities, send the completed registration file that you downloaded in "Step 6: Call the Multi-Tech BBS" to Multi-Tech or to a fax machine in your office.

### **PhoneTools**

The following procedure uses the PhoneTools program that is included with your modem.

1. In the PhoneTools main window, click the **Menus** button, and then click **Phone-Book**.
2. In the **Phone Book** dialog box, click the **Edit New Record** button.
3. In the **Record** box, type **Multi-Tech Systems** on the **Name** line, and then type **612-785-9874** on the **Fax** line.
4. Save the new record and close the **Phone Book** dialog box.
5. Depending on which version of the registration file you downloaded, use either Microsoft Word or NotePad to open the registration file.
6. Fill out the registration form and save the file.
7. In the menu bar, click **File** and then click **Print**.
8. In the **Print** dialog box, select **CAPTURE FAX BVRP** as the printer, and click **OK**. The PhoneTools **Send Fax** dialog box appears.
9. In the **Send Fax** dialog box, click the **Copy from Phonebook** button.
10. In the **Copy from Phonebook** dialog box, double-click on the Multi-Tech Systems entry to copy the Multi-Tech name and fax number into the **Send Fax** dialog box.
11. Under **Options** select **Cover Page**, then type a message in the **Cover Page** box.
12. Click **Send**, then click **Send** in the dialog box that appears. As the fax is transmitted, a progress report and a miniature of the transmitted fax are displayed in the PhoneTools fax window.
13. Exit PhoneTools when the progress report says the fax has been successfully sent.

### **Microsoft Fax**

The following procedure uses the Microsoft Fax application that is included with Windows 95 and Windows 98. Microsoft Fax is installed in Windows 95 as part of the Microsoft Exchange option. You can use Microsoft Fax either as a stand-alone fax program or to fax from within another application. In the following procedure you will test your fax modem by running Microsoft Fax as a stand-alone fax program.

1. Depending on which version of the registration file you downloaded, use either Microsoft Word or NotePad to open the registration file.
2. Fill out the registration form.
3. Save the file and exit Word or NotePad.



4. Select **Start | Programs | Accessories | Fax | Compose new fax**.
5. The **Compose New Fax** wizard appears. Click **Next**.
6. If you are sending the registration form to your own fax machine or to another fax modem in your office, type the destination name and phone number in the **To** and **Fax #** boxes.  
  
If you are sending the registration form to our offices, type **Multi-Tech Systems** in the **To** box, and **612 785-9874** in the **Fax #** boxes.
7. Click **Add to list**, then click **Next**.
8. Pick a cover page, then click **Next**.
9. Type a subject line (e.g., **MessageSaver registration**) and a note to go on the cover page, then click **Next**.
10. Click **Add file**. In the **Open a file to attach** dialog box, select the registration file and click **Open**. The registration file is added to the **Files to send** list box.
11. Click **Next**, then click **Finish**.
12. Microsoft Fax opens the registration file in Word or NotePad, prints it to the Rendering System, then dials the recipient and sends the fax.
13. Exit Microsoft Fax when the **Status** dialog box says the fax has been successfully sent.

### ***Other Ways to Access Microsoft Fax***

- In a Windows 3.1x or Windows 9x application, select **Print** from the **File** menu, then select **Microsoft Fax** as the default printer.
- In a Windows 9x application, select **Send** from the **File** menu.
- In Microsoft Exchange, select **Compose**, then select **New fax**.

## **References**

The World Wide Web is an excellent source of information about modems in general and modem installation, configuration, and troubleshooting in particular. The following Web sites are good places to start:

- Costmo's Other Resources Page:  
<http://modems.rosenet.net/>
- Curt's High Speed Modem Page:  
<http://elaine.teleport.com/~curt/modems.html>
- Data Communications FAQ:  
<http://www.best.com/~malch/comfaq.html>
- Multi-Tech Systems, Inc.:  
<http://www.multitech.com/>



**3**

***MessageSaver  
Operation***

# Introduction

Like other modems, the Multi-Tech MessageSaver can operate under the control of a communication program such as PhoneTools, which is included with the modem. However, unlike other modems, it can also operate in Independent mode, in which the MessageSaver can receive and store voice messages and faxes when the computer is off or PhoneTools is not running. This chapter describes how to operate the MessageSaver in Independent mode.

## PhoneTools Features

Using PhoneTools you can:

- Store incoming voice messages and faxes with the computer off (voice messages have a maximum length of 60 seconds).
- Retrieve stored messages, faxes, and telephone numbers (telephone number retrieval requires Caller ID service from your phone company).
- Specify an access code for remote retrieval of messages.
- Print a received fax (your PC must be powered on and PhoneTools loaded).
- Automatically set the time and date.

## Independent Mode Functions

- Retrieval of data specific to the modem's Independent mode operation, such as:
  - Remaining amount of memory for the storage of received faxes and messages.
  - Number of faxes in the modem's memory.
  - Number of voice messages in the modem's memory.
- Retrieval of data specific to each fax or message stored in the modem, such as:
  - Date and time of reception.
  - Length of a voice message or fax in seconds.
  - The sender's Caller ID (if you have Caller ID service).
  - The sender's fax identifier (CSID).
  - The number of fax pages.
- Retrieval of each file's data contents.
- Configuration of Independent mode operation, such as:
  - Configuration of the modem's answer mode (no answer, fax, data, or auto voice, fax, and data).
  - Number of rings before answer.
  - Status of the speaker during Independent mode communications.
  - The local fax identifier (CSID).
  - Activation and deactivation of remote message retrieval, and selection of the remote access code.

- Download of the greeting message into the modem's memory.
- Deletion of messages and faxes in the modem's memory.
- Specific configuration tasks:
  - Recording of the greeting message on the modem's microphone.
  - Playback of the greeting message on the modem's speaker.
  - Playback of the received voice mail on the modem's speaker.

## Recording and Downloading an Announcement

Announcements, or greeting messages, are used to greet and guide the caller. The MessageSaver has a default announcement loaded in its memory. You can use the default announcement if it meets your needs, or you can record your own custom announcements.

### To record an announcement

1. In PhoneTools, click the **Voice** button, and then click the **Answerphone Setup** button.
2. In the **Answerphone Setup** dialog box, click the **Choose Greeting Message** button to open the **Choose an announcement** dialog box.
3. In the **Record using** box, select the record peripheral (**Modem** or **Sound card**).
4. Adjust the volume control, and then click the record button to start recording. The greeting message can be up to 50 seconds in length. **Note:** The MessageSaver's microphone is located behind a small hole in the front panel.
5. Click the stop button to stop recording. The **Announcement Description** dialog box appears.
6. Type a brief description of the message in the **Announcement Description** dialog box, and then click **OK**.
7. To replay the message, click the playback button in the **Choose an announcement** dialog box.
8. Exit the **Choose an announcement** dialog box.

### To download an announcement to the modem

1. In the PhoneTools main window, click the **Configure** button, and then click **Independent Mode Configuration**.
2. In the **Independent Mode Configuration** dialog box, select a recording from the **Announcements** list box, and then click **Download on modem** to copy it to the modem.

## Independent Mode Operation in PhoneTools

In PhoneTools, Independent mode control is provided in two dialog boxes: the **Independent Mode Configuration** dialog box, and the **Independent Mode Control** dialog box. When PhoneTools is running, you can open either dialog box to change settings, download files, or do any work related to Independent mode.

### **Independent Mode Configuration Dialog Box**

The **Independent Mode Configuration** dialog box (Figure 3-1) enables you to:

- Turn Independent mode on or off while the PhoneTools is running.
- Specify whether Independent mode should be activated when PhoneTools closes.
- Turn on call screening.
- Specify an access code for remote message retrieval.
- Select and download an Independent mode greeting message to the modem.
- Display which Independent mode greeting message is stored in the modem.

If automatic activation of Independent mode is selected, the settings are uploaded to the modem when you exit the application. If automatic activation cannot be completed for any reason (e.g., modem not responding, no greeting message specified, etc.), you are notified so you can return to PhoneTools to fix the problem.

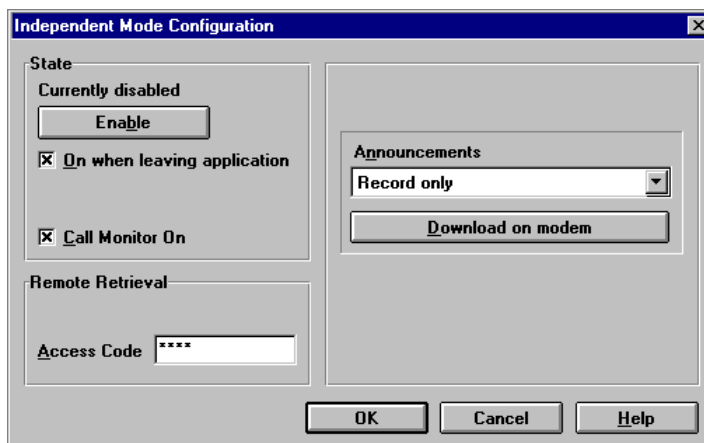


Figure 3-1. Independent Mode Configuration dialog box

## Independent Mode Control Dialog Box

From the **Independent Mode Control** dialog box you can :

- Download all faxes and voice messages from the modem to the PhoneTools **Inbox**.
- Download only new files.
- Clear the modem's memory.

On startup, PhoneTools reads the modem's memory to determine whether any new messages or faxes have been received. If new messages or faxes have been received, the **Independent Mode Control** dialog box appears (Figure 3-2). The **Independent Mode Control** dialog box is updated every few seconds to show new messages and faxes and the amount of free memory.

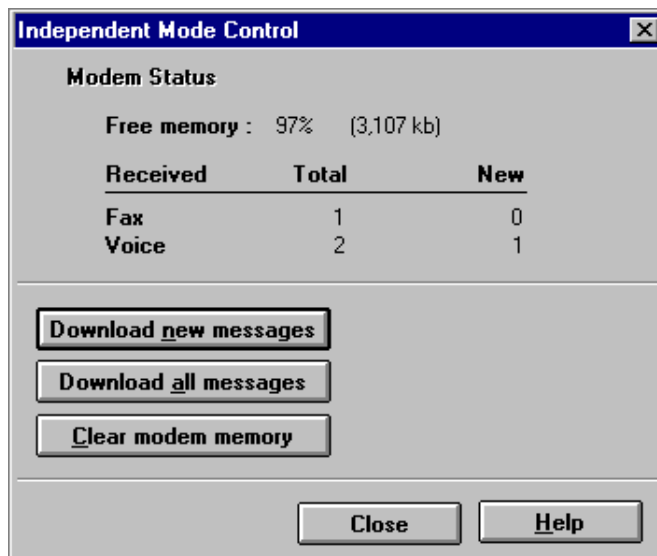


Figure 3-2. **Independent Mode Control** dialog box

The upper portion of the **Independent Mode Control** dialog box displays the current status of the modem's message memory, including:

- Quantity of remaining memory.
- Quantities of total and new voice messages stored in the modem
- Quantities of total and new faxes stored in the modem

Use the lower portion of the **Independent Mode Control** dialog box to copy messages and faxes from the modem to your computer, and to free up memory by deleting them from the modem.

---

**Note:** Because MessageSaver memory capacity is limited, we recommend that you periodically delete stored messages and faxes.

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## Independent Mode Operation Using the Front Panel

This section describes how to use the MessageSaver's front panel to play back messages when the MessageSaver is in Independent mode, and how to interpret the indicator lights.

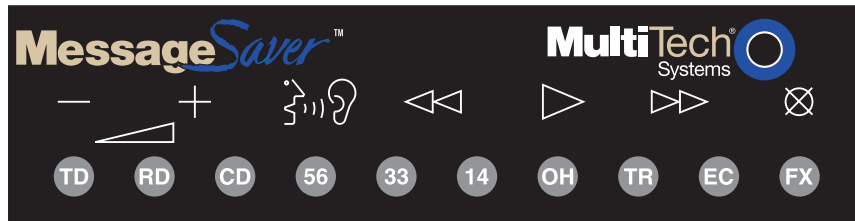







Figure 3-3. MessageSaver front panel

### Control Buttons

The MessageSaver front panel contains seven pushbuttons that control message playback and speakerphone mode when the modem is in Independent mode.

- **Volume Down.** Decreases the speaker volume.
- + **Volume Up.** Increases the speaker volume.
-  **Speakerphone.** Selects speakerphone mode for hands-free phone calls. It is not used in playback mode. **Note:** The MessageSaver's microphone is located behind a small hole in the front panel.
-  **Previous.** Plays the message immediately before the current message.
-  **Play.** Plays the first message. If the **Play** button is pressed and released during playback, playback stops.
-  **Next.** Plays the message immediately after the current message.
-  **Delete.** Deletes the message that is currently playing.



## Indicator Lights

The MessageSaver has ten LED indicators on the front panel that indicate status, configuration, and activity:

- **TD Transmit Data.** The **TD** indicator flashes when the modem is transmitting data to another modem.
- **RD Receive Data.** The **RD** indicator flashes when the modem is receiving data from another modem. It also flashes when the modem is in update mode (sending faxes, messages, etc., to the computer).
- **CD Carrier Detect.** The **CD** indicator lights when the modem detects a valid carrier signal from another modem. It is on when the modem is communicating with the other modem and off when the link is broken.
- **56 56K Mode (56,000–28,000 bps).** The **56** indicator lights whenever the modem is set for or connects using either the K56flex or the V.90 protocol. The actual connection speed depends on server capabilities and line conditions.
- **33 V.34 Mode (33,600–16,800 bps).** The **33** indicator lights whenever the modem connects using the V.34 protocol.
- **14 V.32bis Mode (14,400 bps).** The **14** indicator lights whenever the modem connects using the V.32bis protocol.

---

**Note:** Although the modem can connect at lower than V.32bis speeds, no speed indicator lights during the connection.

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- **OH Off-Hook.** The **OH** indicator lights when the modem is off-hook, which occurs when the modem is dialing, online, or answering a call. The LED flashes when the modem pulse-dials.
- **TR Terminal Ready.** The **TR** indicator lights when a communication program is using the modem. It means the modem is ready for an outgoing or incoming call. It goes off when the communication program disconnects the serial port. When it goes off, a connected modem will disconnect.
- **EC Error Correction (V.42).** The **EC** indicator lights continuously when the modem is in V.42 error correction mode, and flashes when compression is activated. When the modem is offline, the **EC** indicator flashes to indicate that one or more voice messages have been received.
- **FX Fax.** The **FX** indicator lights when the modem is in fax mode. When the modem is offline, the **FX** indicator flashes to indicate that one or more faxes have been received.

---

**Note:** When you turn on the modem, the speed indicators flash briefly as the modem does a self-test, then the **56** indicator lights. After a call, the indicator for the connection's speed protocol remains lit until another call is made or the modem is reset. If you connect at a rate under 14,400 bps, all speed indicators remain off after the connection is broken, even though the modem is still turned on.

---

### Answering a Call with the Speakerphone

To answer an incoming telephone call using the speakerphone, or to switch to the modem's speakerphone for an existing call, using the front panel buttons:

1. Press the **Speakerphone** button to enter speakerphone mode.
2. After the call has been completed, press the **Speakerphone** button again to exit speakerphone mode
3. To change the volume setting, press the **Volume Up** or **Volume Down** button.

### Playing Voice Messages

The EC indicator flashes to indicate that you have voice messages waiting. To play these messages:

1. Press the **Play** button to replay the voice messages. The MessageSaver announces the number of received messages stored. It also announces the time that each message was recorded. The date or year is announced only if it differs from the date or year it is replayed.
2. When you have played the last message, the MessageSaver stops automatically.

### Stopping the Play of Voice Messages

To stop playing messages at any time, press the **Play** button.

### Listening to the Next Voice Message

To skip from the current message to the next message during replay, press the **>>** button to fast-forward. When you release the **>>** button, the next message in the queue is played.

### Listening to the Previous Voice Message

To skip from the current message to a previous message during replay, press the **<<** button to fast rewind. When you release the **<<** button, the next message in the queue is played.

### Erasing a Voice Message During Replay

To erase the current message during replay, press the **Delete** button. The MessageSaver announces *message deleted* and plays the next message.

### Adjusting Speaker Volume

To adjust MessageSaver speaker volume when replaying any message:

- Press the **+** button to increase speaker volume.
- Press the **-** button to decrease speaker volume.

## ***Using the MessageSaver in Speakerphone Mode***

The MessageSaver enables you answer a call without using a telephone handset. It also enables you to initiate a call in speakerphone mode, using a telephone handset to dial a number.

### **To answer a call in speakerphone mode**

1. Press the **Speakerphone** button and speak into the microphone. The **OH** indicator lights to indicate that a call is in progress.
2. To hang up, press the **Speakerphone** button again. The **OH** indicator goes out.

### **To initiate a call in speakerphone mode**

1. Lift the telephone handset.
2. Dial the recipient's telephone number, then press the MessageSaver **Speakerphone** button.
3. Hang up the telephone handset and speak into the MessageSaver microphone on the front panel. The **OH** indicator lights, indicating that a call is in progress.
4. To hang up, press the **Speakerphone** button again. The **OH** indicator goes out.

## **Remote Control**

When the MessageSaver is in Independent mode, you can retrieve voice messages and otherwise control the MessageSaver from a remote telephone. Remote control operates only after a four-digit access code has been entered on the remote telephone. You can specify the access code in the PhoneTools **Independent Mode Configuration** dialog box (see Chapter 7).

## ***Controlling the MessageSaver Remotely***

1. Dial the MessageSaver's telephone number.
2. When the greeting announcement starts playing, press the # key on your telephone. The MessageSaver prompts you to enter your code.
3. Enter your Independent mode four-digit access code. The MessageSaver announces the system information. Press the \* key to access the voice menu for assistance.
4. Using the following table, press the desired telephone keys to control the MessageSaver. You can hang up at any time by pressing the 5 key, or by replacing the telephone receiver. If you are recording, you can stop at any time by pressing any button.

---

**Note:** Be careful not to confuse the following remote control key assignments with the remote control key assignments in the PhoneTools **AnswerPhone Setup** dialog box, which are used when PhoneTools is running and Independent mode is disabled.

---

### **Remote Control Keys**

<b>Dial</b>	<b>To perform</b>
<b>0</b>	(Reserved for future use.)
<b>1</b>	During replay: Erase the current message. During greeting announcement: Record a new greeting announcement.
<b>2</b>	Replay the greeting announcement Stop recording the greeting announcement.
<b>3</b>	Turn off Independent mode.
<b>4</b>	Erase all messages.
<b>5</b>	Hang up.
<b>6</b>	List all calls.
<b>7</b>	Play the previous message.
<b>8</b>	Play all messages.
<b>9</b>	Play the next message.
<b>*</b>	Access the voice menu.
<b>#</b>	During greeting announcement: Enter remote control mode.
<b>any</b>	Stop recording.

### **Activating Independent Mode Remotely**

If you forget to turn Independent mode on in advance, you can activate it from a remote location.

1. Dial the MessageSaver's telephone number and let it ring nine times. The MessageSaver answers and plays the greeting announcement.
2. Hang up the phone during the greeting announcement. The MessageSaver can now answer calls.

# 4

## ***AT Commands, S-Registers & Result Codes***

## AT Commands

AT commands are used to control the operation of your modem. They are so called because each command must be preceded by the characters *AT* to get the *AT*tention of the modem.

AT commands can be issued only when the modem is in command mode or online command mode. The modem is in *command mode* whenever it is not connected to another modem. The modem is in *data mode* whenever it is connected to another modem and ready to exchange data. *Online command mode* is a temporary state in which you can issue commands to the modem while connected to another modem. To put the modem into online command mode from data mode, you must issue an *escape sequence* (+++) followed immediately by the *AT* characters and the command, e.g., +++ATH to hang up the modem. To return to data mode from online command mode, you must issue the command ATO.

To send AT commands to the modem you must use a communications program, such as the HyperTerminal applet in Windows 95 and NT 4.0, or the communications program included with your modem. You can issue commands to the modem either directly, by typing them in the terminal window of the communications program, or indirectly, by configuring the operating system or communications program to send the commands automatically. Fortunately, communications programs make daily operation of modems effortless by hiding the commands from the user. Most users, therefore, need to use AT commands only when reconfiguring the modem, e.g., to turn autoanswer on or off.

The format for entering an AT command is **ATXn**, where *X* is the command and *n* is the value for the command, sometimes called the command *parameter*. The value is always a number. If the value is zero, you can omit it from the command; thus, **AT&W** is equivalent to **AT&W0**. Most commands have a *default* value, which is the value that is set at the factory. The default values are shown in the "AT Command Summary," which begins on the next page.

You must press ENTER to send the command to the modem. Any time the modem receives a command, it sends a response known as a *result code*. The most common result codes are *OK*, *ERROR*, and the *CONNECT* messages that the modem sends to the computer when it is connecting to another modem. For a table of valid result codes, see "Result Codes" at the end of this chapter.

You can issue several commands in one line, in what is called a command *string*. The command string begins with **AT** and ends when you press ENTER. Spaces to separate the commands are optional; they are ignored by the command interpreter. The most familiar command string is the *initialization string*, which is used to configure the modem when it is turned on or reset, or when your communications software calls another modem.

## AT Command Summary

Command:	<b>AT</b>	<b>Attention Code</b>
Values:		n/a
Description:		The attention code precedes all command lines except <b>A/</b> , <b>A:</b> , and the escape sequence.
Command:	<b>ENTER</b>	<b>Key</b>
Values:		n/a
Description:		Press the ENTER or RETURN key to execute most commands.
Command:	<b>A</b>	<b>Answer</b>
Values:		n/a
Description:		Answer an incoming call before the final ring.
Command:	<b>A/</b>	<b>Repeat Last Command</b>
Values:		n/a
Description:		Repeat the last command string. Do not precede this command with <b>AT</b> . Do not press ENTER to execute.
Command:	<b>Bn</b>	<b>Communication Standard Setting</b>
Values:		$n = 0-3, 15, 16$
Default:		1 and 16
Description:	B0	Select ITU-T V.22 mode when modem is at 1200 bps.
	B1	Select Bell 212A when modem is at 1200 bps.
	B2	Deselect V.23 reverse channel (same as <b>B3</b> ).
	B3	Deselect V.23 reverse channel (same as <b>B2</b> ).
	B15	Select V.21 when the modem is at 300 bps.
	B16	Select Bell 103J when the modem is at 300 bps.
Command:	<b>Cn</b>	<b>Carrier Control</b>
Values:		$n = 1$
Default:		1
Description:	C0	Transmit carrier always off. (Not supported.)
	C1	Normal transmit carrier switching (included for backward compatibility with some software).
Command:	<b>Ds</b>	<b>Dial</b>
Values:		$s =$ dial string (phone number and dial modifiers)
Default:		none
Description:		Dial telephone number $s$ , where $s$ may up to 40 characters long and include the 0-9, *, #, A, B, C, and D characters, and the L, P, T, V, W, S, comma (,), semicolon (;), !, @, ^ and \$ dial string modifiers.
		<i>Dial string modifiers:</i>
	L	Redial last number. (Must be placed immediately after <b>ATD</b> .)
	P	Pulse-dial following numbers in command.
	T	Tone-dial following numbers in command (default).

- V Switch to speakerphone mode and dial the following number. Use **ATH** command to hang up.
- W Wait for a new dial tone before continuing to dial. (**X2**, **X4**, **X5**, **X6**, or **X7** must be selected.)
- , Pause during dialing for time set in register S8.
- ; Return to command mode after dialing. (Place at end of dial string.)
- ! Hook flash. Causes the modem to go on-hook for one-half second, then off-hook again.
- @ Wait for quiet answer. Causes modem to wait for a ring-back, then 5 seconds of silence, before processing next part of command. If silence is not detected, the modem returns a NO ANSWER code.
- ^ Disable data calling tone transmission.
- \$ Detect AT&T call card "bong" tone. The character should follow the phone number and precede the user's call card number: **ATDT1028806127853500\$123456789**

Command: **DS=y Dial Stored Telephone Number**  
Values:  $y = 0-3$   
Default: none  
Description: Dial a number previously stored in directory number  $y$  by the **&Zy=x** command. Example: **ATDS=3**.

Command: **En Echo Command Mode Characters**  
Values:  $n = 0$  or  $1$   
Default:  $1$   
Description: E0 Do not echo keyboard input to the terminal.  
E1 Do echo keyboard input to the terminal.

Command: **Fn Echo Online Data Characters**  
Values:  $n = 1$   
Default:  $1$   
Description: F0 Enable online data character echo. (Not supported.)  
F1 Disable online data character echo (included for backward compatibility with some software).

Command: **Hn Hook Control**  
Values:  $n = 0$  or  $1$   
Default:  $0$   
Description: H0 Go on-hook (hang up).  
H1 Go off-hook (make the phone line busy).

Command: **In Information Request**  
Values:  $n = 0-5, 9, 11$   
Default: None  
Description: I0 Display default speed and controller firmware version.  
I1 Calculate and display ROM checksum (e.g., *12AB*).  
I2 Check ROM and verify the checksum, displaying *OK* or *ERROR*.  
I3 Display default speed and controller firmware version.  
I4 Display firmware version for data pump (e.g., *94*).



	I5		Display the board ID: software version, hardware version, and country ID
	I9		Display the country code (e.g., <i>NA Ver. 1</i> ).
	I11		Display diagnostic information for the last modem connection, such as DSP and firmware version, link type, line speed, serial speed, type of error correction/data compression, number of past retrains, etc.
Command:	<b>Ln</b>	<b>Monitor Speaker Volume</b>	
Values:			$n = 0, 1, 2, \text{ or } 3$
Default:			2
Description:	L0		Select low volume.
	L1		Select low volume.
	L2		Select medium volume.
	L3		Select high volume.
Command:	<b>Mn</b>	<b>Monitor Speaker Mode</b>	
Values:			$n = 0, 1, 2, \text{ or } 3$
Default:			1
Description:	M0		Speaker always off.
	M1		Speaker on until carrier signal detected.
	M2		Speaker always on when modem is off-hook.
	M3		Speaker on until carrier is detected, except while dialing.
Command:	<b>Nn</b>	<b>Modulation Handshake</b>	
Values:			$n = 0 \text{ or } 1$
Default:			1
Description:	N0		Modem performs handshake only at communication standard specified by <i>S37</i> and the <i>B</i> command.
	N1		Modem begins handshake at communication standard specified by <i>S37</i> and the <i>B</i> command. During handshake, fallback to a lower speed can occur.
Command:	<b>On</b>	<b>Return Online to Data Mode</b>	
Values:			0, 1, 3
Default:			None
Description:	O0		Exit online command mode and return to data mode (see <i>+++AT&lt;CR&gt;</i> escape sequence).
	O1		Issue a retrain and return to online data mode.
	O3		Issue a rate renegotiation and return to data mode.
Command:	<b>P</b>	<b>Pulse Dialing</b>	
Values:			P, T
Default:			T
Description:			Configures the modem for pulse (non-touch-tone) dialing. Dialed digits are pulsed until a <i>T</i> command or dial modifier is received.

Command:	<b>Qn</b>	<b>Result Codes Enable/Disable</b>
Values:		$n = 0$ or $1$
Default:		$0$
Description:	Q0	Enables result codes.
	Q1	Disables result codes.
	Q2	Returns an OK for backward compatibility with some software.
Command:	<b>Sr=n</b>	<b>Set Register Value</b>
Values:		$r =$ S-register number; $n$ varies
Default:		None
Description:		Set value of register $Sr$ to value of $n$ , where $n$ is entered in decimal format. E.g., <b>S0=1</b> .
Command:	<b>Sr?</b>	<b>Read Register Value</b>
Values:		$r =$ S-register number
Default:		None
Description:		Read value of register $Sr$ and display it in 3-digit decimal form. E.g., <b>S2?</b> gives the response <i>043</i> .
Command:	<b>T</b>	<b>Tone Dialing</b>
Values:		P, T
Default:		T
Description:		Configures the modem for DTMF (touch-tone) dialing. Dialed digits are tone dialed until a <b>P</b> command or dial modifier is received.
Command:	<b>Vn</b>	<b>Result Code Format</b>
Values:		$n = 0$ or $1$
Default:		$1$
Description:	V0	Displays result codes as digits (terse response).
	V1	Displays result codes as words (verbose response).
Command:	<b>Wn</b>	<b>Result Code Options</b>
Values:		$n = 0, 1,$ or $2$
Default:		$2$
Description:	W0	CONNECT result code reports serial port speed, disables protocol result codes.
	W1	CONNECT result code reports serial port speed, enables protocol result codes.
	W2	CONNECT result code reports line speed, enables protocol result codes.
Command:	<b>Xn</b>	<b>Result Code Selection</b>
Values:		$n = 0-7$
Default:		$4$
Description:	X0	Basic result codes (e.g., <i>CONNECT</i> ); does not look for dial tone or busy signal.
	X1	Extended result codes (e.g., <i>CONNECT 46000 V42bis</i> ); does not look for dial tone or busy signal.
	X2	Extended result codes with <i>NO DIALTONE</i> ; does not look for busy signal.

	X3	Extended result codes with <i>BUSY</i> ; does not look for dial tone.
	X4	Extended result codes with <i>NO DIALTONE</i> and <i>BUSY</i> .
	X5	Extended result codes with <i>NO DIALTONE</i> and <i>BUSY</i> .
	X6	Extended result codes with <i>NO DIALTONE</i> and <i>BUSY</i> .
	X7	Basic result codes with <i>NO DIALTONE</i> and <i>BUSY</i> .
Command:	<b>Yn</b>	<b>Long Space Disconnect</b>
Values:		$n = 0$
Default:		0
Description:	Y0	Disable sending or responding to long space break signal on disconnect.
	Y1	Enable sending or responding to long space break signal on disconnect. (Not supported.)
Command:	<b>Zn</b>	<b>Modem Reset</b>
Values:		$n = 0$ or 1
Default:		None
Description:	Z0	Reset modem to profile saved by the last <i>&amp;W</i> command.
	Z1	Same as <b>Z0</b> .
Command:	<b>&amp;Bn</b>	<b>V.32 Auto Retrain</b>
Values:		$n = 1$
Default:		1
Description:	&B0	Disable V.32 auto retrain. (Not supported.)
	&B1	Enable V.32 auto retrain.
Command:	<b>&amp;Cn</b>	<b>Data Carrier Detect (DCD) Control</b>
Values:		$n = 0$ or 1
Default:		1
Description:	&C0	Forces the DCD circuit to be always high.
	&C1	DCD goes high when the remote modem's carrier signal is detected, and goes low when the carrier signal is not detected.
Command:	<b>&amp;Dn</b>	<b>Data Terminal Ready (DTR) Control</b>
Values:		$n = 0, 1, 2,$ or 3
Default:		2
Description:	&D0	Modem ignores the true status of the DTR signal and responds as if it is always on.
	&D1	If DTR drops while in online data mode, the modem enters command mode, issues an <i>OK</i> , and remains connected.
	&D2	If DTR drops while in online data mode, the modem hangs up. If the signal is not present, the modem will not answer or dial.
	&D3	If DTR drops, the modem hangs up and resets as if an <i>ATZ</i> command were issued.

Command: **&Fn Load Factory Settings**  
Values:  $n = 0$   
Default: None  
Description: &F0 Load factory settings as active configuration.

**Note:** See also the **Z** command.

Command: **&Gn V.22bis Guard Tone Control**  
Values:  $n = 0, 1, \text{ or } 2$   
Default: 0  
Description: &G0 Disable guard tone.  
&G1 Set guard tone to 550 Hz.  
&G2 Set guard tone to 1800 Hz.

**Note:** The **&G** command is not used in North America.

Command: **&Jn Auxiliary Relay Control**  
Values:  $n = 0$   
Default: 0  
Description: &J0 The auxiliary relay is never closed.  
&J1 Not supported—responds *ERROR*.

Command: **&Kn Flow Control Selection**  
Values:  $n = 0, 3, \text{ or } 4$   
Defaults: 3  
Description: &K0 Disable flow control.  
&K3 Enable CTS/RTS hardware flow control.  
&K4 Enable XON/XOFF software flow control.

Command: **&Mn Communications Mode**  
Values:  $n = 0$   
Defaults: 0  
Description: &M0 Asynchronous mode.  
&M1 Not supported—responds *ERROR*.

Command: **&Qn Asynchronous Communications Mode**  
Values:  $n = 0, 5, 6, 8, \text{ or } 9$   
Default: 5  
Description: &Q0 Asynchronous with data buffering. Same as **\N0**.  
&Q5 Error control with data buffering. Same as **\N3**.  
&Q6 Asynchronous with data buffering. Same as **\N0**.  
&Q8 MNP error control mode. If MNP error control is not established, the modem falls back according to the setting in **S36**.  
&Q9 V.42 or MNP error control mode. If neither error control is established, the modem falls back according to the setting in **S36**.

Command: **&Sn Data Set Ready (DSR) Control**  
Values:  $n = 0 \text{ or } 1$   
Default: 0  
Description: &S0 Force DSR always high (on).  
&S1 Let DSR go high only during a connection.

Command: **&Tn V.54 Test Commands**  
Values:  $n = 0, 1, 3$  or  $6$   
Default: None  
Description: &T0 Abort. Stop any test in progress.  
&T1 Local analog loopback test.  
&T3 Local digital loopback test.  
&T6 Remote digital loopback test.

**Note:** To stop a test, you must use the escape sequence (**+++AT**) before typing **AT&T0**.

Command: **&V Display Current Settings**  
Values: n/a  
Description: Displays the active modem settings, including the callback security settings if callback security is enabled. If the setup password has been entered, it also displays the callback security passwords.

Command: **&Wn Store Current Configuration**  
Values:  $n = 0$   
Default: None  
Description: &W0 Stores current modem settings in nonvolatile memory and causes them to be loaded at power-on or following the **ATZ** command instead of the factory defaults. See also the **&F** command.  
&W1 Clears user default settings from nonvolatile memory and causes the factory defaults to be loaded at power-on or following the **ATZ** command.

Command: **&Yn Select Stored Configuration for Hard Reset**  
Values:  $n = 0$   
Default: 0  
Description: &Y0 Select stored configuration 0 on power-up. (For backward compatibility with some software.)  
&Y1 Not supported—responds *ERROR*.

Command: **&Zy=x Store Dialing Command**  
Values:  $y = 0-3$  (callback security disabled) or  $0-29$  (callback security enabled)  
 $x =$  Dialing command  
Default: None  
Description: Stores dialing command  $x$  in memory location  $y$ . Dial the stored number using the command **ATDS=y**. See also the **#CBSn** command. For callback security options, see Chapter 6.

Command: **&&S Speaker Codec Loopback**  
Values: n/a  
Description: Provides a loopback from the microphone to the speaker. *For testing and debugging only.*

Command:	<b>\An</b>	<b>Select Maximum MNP Block Size</b>
Values:		$n = 0, 1, 2, \text{ or } 3$
Default:		3
Description:	\A0	64-character maximum.
	\A1	128-character maximum.
	\A2	192-character maximum.
	\A3	256-character maximum.
Command:	<b>\Bn</b>	<b>Transmit Break</b>
Values:		$n = 0-9$ in 100 ms units
Default:		3
Description:		In non-error-correction mode only, sends a break signal of the specified length to a remote modem. Works in conjunction with the \K command.
Command:	<b>\Gn</b>	<b>Modem Port Flow Control</b>
Values:		$n = 0$
Default:		0
Description:	\G0	Returns an <i>OK</i> for backward compatibility with some software.
	\G1	Not supported—responds <i>ERROR</i> .
Command:	<b>\Jn</b>	<b>Data Buffer Control</b>
Values:		$n = 0$
Default:		0
Description:	\J0	Enable data buffer—serial port speed is independent of connect speed.
	\J1	Disable data buffer—serial port speed is forced to the line speed.
Command:	<b>\Kn</b>	<b>Break Control</b>
Values:		$n = 0-5$
Default:		5
Description:		Controls the response of the modem to a break received from the computer, the remote modem, or the \B command. The response is different for each of three different states.
		<b>Data mode.</b> The modem receives the break from the computer:
	\K0	Enter online command mode, no break sent to the remote modem.
	\K1	Clear data buffers and send break to the remote modem.
	\K2	Same as \K0.
	\K3	Send break immediately to the remote modem .
	\K4	Same as \K0.
	\K5	Send break to the remote modem in sequence with the transmitted data.
		<b>Data mode.</b> The modem receives the break from the remote modem:
	\K0	Clear data buffers and send break to the computer.
	\K1	Same as \K0.
	\K2	Send break immediately to the computer.
	\K3	Same as \K2.

- \K4 Send break to the computer in sequence with the received data.
- \K5 Same as \K4.

**Online command mode.** The modem receives a \B*n* command from the computer:

- \K0 Clear data buffers and send break to the remote modem.
- \K1 Same as \K0.
- \K2 Send break immediately to the remote modem.
- \K3 Same as \K2.
- \K4 Send break to the remote modem in sequence with the transmitted data.
- \K5 Same as \K4.

Command: **\N*n*** **Error Correction Mode Selection**

Values: *n* = 0–5, or 7

Default: 3

- Description:
- \N0 Non-error correction mode with data buffering (buffer mode; same as &Q6).
  - \N1 Direct mode.
  - \N2 MNP reliable mode. If the modem cannot make an MNP connection, it disconnects.
  - \N3 V.42/MNP auto-reliable mode. The modem attempts first to connect in V.42 error correction mode, then in MNP mode, and finally in non-error-correction (buffer) mode with continued operation.
  - \N4 V.42 reliable mode. If the modem cannot make a V.42 connection, it disconnects.
  - \N5 V.42, MNP, or non-error correction (same as \N3).
  - \N7 V.42, MNP, or non-error correction (same as \N3).

Command: **\Q*n*** **Flow Control Selection**

Values: *n* = 0, 1, or 3

Default: 3

- Description:
- \Q0 Disable flow control (same as &K0).
  - \Q1 XON/XOFF software flow control (same as &K4).
  - \Q2 CTS-only flow control. Not supported.
  - \Q3 RTS/CTS hardware flow control (same as &K3).

Command: **\T*n*** **Inactivity Timer**

Values: *n* = 0, 1–255

Default: 0

- Description:
- \T*n* Sets the time (in minutes) after the last character is sent or received that the modem waits before disconnecting. A value of zero disables the timer. Applies only in buffer mode.

**Note:** You can also set the inactivity timer by changing the value of S30.

- Command: **\Vn Protocol Result Code**  
Values:  $n = 0, 1, \text{ or } 2$   
Default: 1  
Description: \V0 Disable the appending of the protocol result code to the DCE speed.  
\V1 Enable the appending of the protocol result code to the DCE speed.  
\V2 Same as \V1.
- Command: **\Xn XON/XOFF Pass-Through**  
Values:  $n = 0 \text{ or } 1$   
Defaults: 0  
Description: \X0 Modem responds to and discards XON/XOFF characters.  
\X1 Modem responds to and passes XON/XOFF characters.
- Command: **-Cn Data Calling Tone**  
Values:  $n = 0 \text{ or } 1$   
Defaults: 0  
Description: -C0 Disable V.25 data calling tone to deny remote data/fax/voice discrimination.  
-C1 Enable V.25 data calling tone to allow remote data/fax/voice discrimination.
- Command: **%B View Numbers in Blacklist**  
Values: n/a  
Description: If blacklisting is in effect, **AT%B** displays the numbers for which the last call attempted in the previous two hours failed. In countries that do not require blacklisting, the *ERROR* result code appears.
- Command: **%Cn Data Compression Control**  
Values:  $n = 0 \text{ or } 1$   
Default: 1  
Description: %C0 Disable V.42bis/MNP 5 data compression.  
%C1 Enable V.42bis/MNP 5 data compression.
- Command: **%DCn AT Command Control**  
Values:  $n = 0 \text{ or } 1$   
Default: 0  
Description: %DC0 The modem responds to AT commands.  
%DC1 The modem ignores AT commands.
- Note:** The modem will respond to **AT%DC** for 10 seconds after power-up.
- Command: **%En Fallback and Fall Forward Control**  
Values:  $n = 0, 1, \text{ or } 2$   
Default: 2  
Description: %E0 Disable fallback and fall forward.  
%E1 Enable fallback, disable fall forward.  
%E2 Enable fallback and fall forward.



- Command: **\$Dn DTR Dialing**  
Values:  $n = 0$  or  $1$   
Default:  $0$   
Description: \$D0 Disables DTR dialing.  
\$D1 Dials the number in memory location 0 when DTR goes high.
- Command: **\$EBn Asynchronous Word Length**  
Values:  $n = 0$  or  $1$   
Default:  $0$   
Description: \$EB0 Enables 10-bit mode.  
\$EB1 Enables 11-bit mode.
- Command: **+ES=n Enable Synchronous Buffered Mode**  
Values:  $n = 6$   
Default: None  
Description: Allows an H.324 video application direct access to the synchronous data channel. On underflow, the modem sends HDLC flag idle (0x7E) to the remote modem. This special error control mode is overridden by any of the following commands: *&F*, *&M*, *&Q*, or *\N*.  
  
AT+ES=? shows the only allowed value.  
AT+ES? shows the current value.
- Command: **#Sx Enter Setup Password**  
Values:  $x =$  password (1–8 characters, case sensitive)  
Default: MTSMODEM  
Description: Enters the remote configuration setup password.
- Command: **#S=x Store Setup Password**  
Values:  $x =$  password (1–8 characters, case sensitive)  
Default: MTSMODEM  
Description: Stores a new remote configuration setup password.
- Command: **+++AT<CR> Escape Sequence**  
Values: n/a  
Description: Puts the modem in command mode (and optionally issues a command) while remaining online. Type +++AT and up to ten command characters, then press ENTER. Used mostly to issue the hang-up command: +++ATH<CR>.
- Command: **%%%AT<CR> Remote Configuration Escape Sequence**  
Values: n/a  
Description: Initiates remote configuration mode while online with remote modem. The remote configuration escape character (%) is defined in register *S13*.

## S-Registers

Certain modem values, or parameters, are stored in memory locations called S-registers. Use the **S** command to read or to alter the contents of S-registers (see previous section).

<u>Register</u>	<u>Unit</u>	<u>Range</u>	<u>Default</u>	<u>Description</u>
<b>S0</b>	1 ring	0, 1–255	1	Sets the number of rings until the modem answers. <b>ATS0=0</b> disables autoanswer completely.
<b>S1</b>	1 ring	0–255	0	Counts the rings that have occurred.
<b>S2</b>	decimal	0–127 128–255	43 (+)	Sets ASCII code for the escape sequence character. Values greater than 127 disable escape.
<b>S3</b>	decimal	0–127	13 (^M)	Sets the ASCII code for the carriage return character.
<b>S4</b>	decimal	0–127	10 (^J)	Sets the ASCII code for the line feed character.
<b>S5</b>	decimal	0–32 33–127	8 (^H)	Sets the ASCII code for the backspace character. Values over 32 disable backspace.
<b>S6</b>	seconds	2–65*	2*	Sets the time the modem waits after it goes off-hook before it begins to dial the telephone number.
<b>S7</b>	seconds	1–255*	50*	Sets the time the modem waits for a carrier signal before aborting a call. Also sets the wait for silence time for the @ dial modifier.
<b>S8</b>	seconds	0–65	2	Sets the length of a pause caused by a comma character in a dialing command.
<b>S9</b>	decimal	0, 1–127	37 (%)	Sets ASCII code for remote configuration escape character. <b>S9=0</b> disables remote configuration.
<b>S10</b>	100 ms	1–254	20	Sets how long a carrier signal must be lost before the modem disconnects.
<b>S11</b>	1 ms	50–150*	95*	Sets spacing and duration of dialing tones.
<b>S28</b>	decimal	0, 1–255	1	0 disables, 1–255 enables V.34 modulation.
<b>S30</b>	1 minute	0, 1–255	0	Sets the length of time that the modem waits before disconnecting when no data is sent or received. A value of zero disables the timer. See also the \T command
<b>S35</b>	decimal	0–1	0	0 disables, 1 enables the V.25 data calling tone, which allows remote data/fax/voice discrimination.
<b>S36</b>	decimal	0–7	7	Specifies the action to take in the event of a negotiation failure when error control is selected. (See <b>S48</b> .)

\* These values may be different outside North America.

## 4 AT Commands, S-Registers, and Result Codes

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<u>Register</u>	<u>Unit</u>	<u>Range</u>	<u>Default</u>	<u>Description</u>
S37	decimal	0–19	0	<p>Sets the maximum V.34 “upstream” speed at which the modem attempts to connect.</p> <p>0 = maximum modem speed            1 = reserved            2 = 1200/75 bps            3 = 300 bps            4 = reserved            5 = 1200 bps            6 = 2400 bps            7 = 4800 bps            8 = 7200 bps            9 = 9600 bps            10 = 12000 bps            11 = 14400 bps            12 = 16800 bps            13 = 19200 bps            14 = 21600 bps            15 = 24000 bps            16 = 26400 bps            17 = 28800 bps            18 = 31200 bps            19 = 33600 bps</p>

S38	decimal	0–23	1	<p>Sets the maximum 56K “downstream” speed at which the modem attempts to connect. The default maximum speed is 56K bps.</p>
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<u>Value</u>	<u>V.90 mode</u>	<u>K56flex mode</u>
0	56K disabled	56K disabled
1	56K autorate	56K autorate
2	28000 bps	32000 bps
3	29333 bps	34000 bps
4	30666 bps	36000 bps
5	32000 bps	38000 bps
6	33333 bps	40000 bps
7	34666 bps	42000 bps
8	36000 bps	44000 bps
9	37333 bps	46000 bps
10	38666 bps	48000 bps
11	40000 bps	50000 bps
12	41333 bps	52000 bps
13	42666 bps	54000 bps
14	44000 bps	56000 bps
15	45333 bps	
16	46666 bps	
17	48000 bps	
18	49333 bps	
19	50666 bps	
20	52000 bps	
21	53333 bps	
22	54666 bps	
23	56000 bps	

<i>Register</i>	<i>Unit</i>	<i>Range</i>	<i>Default</i>	<i>Description</i>															
<i>S42</i>	decimal	0–1	1	Enables/disables the 56K auto rate. When 56K auto is disabled, fallback to V.34 is also disabled. 0 = disable; 1 = enable.															
<i>S43</i>	decimal	0–1	1	<i>For testing and debugging only.</i> Enables/disables V.32bis start-up auto mode operation. 0 = disable; 1 = enable.															
<i>S48</i>	decimal	7 or 128	7	Enables (7) or disables (128) LAPM negotiation. The following table lists the <i>S36</i> and <i>S48</i> configuration settings for certain types of connections.															
<table border="1"> <thead> <tr> <th></th> <th>S48=7</th> <th>S48=128</th> </tr> </thead> <tbody> <tr> <td>S36=0, 2</td> <td>LAPM or hangup</td> <td>Do not use</td> </tr> <tr> <td>S36=1, 3</td> <td>LAPM or async</td> <td>Async</td> </tr> <tr> <td>S36=4, 6</td> <td>LAPM, MNP, or hangup</td> <td>MNP or hangup</td> </tr> <tr> <td>S36=5, 7</td> <td>LAPM, MNP, or aysnc</td> <td>MNP or async</td> </tr> </tbody> </table>						S48=7	S48=128	S36=0, 2	LAPM or hangup	Do not use	S36=1, 3	LAPM or async	Async	S36=4, 6	LAPM, MNP, or hangup	MNP or hangup	S36=5, 7	LAPM, MNP, or aysnc	MNP or async
	S48=7	S48=128																	
S36=0, 2	LAPM or hangup	Do not use																	
S36=1, 3	LAPM or async	Async																	
S36=4, 6	LAPM, MNP, or hangup	MNP or hangup																	
S36=5, 7	LAPM, MNP, or aysnc	MNP or async																	
<i>S89</i>	seconds	0, 5–255	10	Sets the length of time in the off-line command mode before the modem goes into standby mode. A value of zero prevents standby mode; a value of 1–4 sets the value to 5.															
<i>S108</i>	decimal	0–3, 6, 7	6	<p>Selects the 56K digital loss if using the modem thru a PBX line. The default value is -6 dB loss, the value used when calling from a typical POTS line long distance.</p> <p>0 = -0 dB digital loss, no robbed-bit signaling            1 = -3 dB PBX digital loss            2 = -2 dB digital loss            3 = -3 dB digital loss            6 = -6 dB digital loss            7 = -0 dB digital loss with robbed-bit signaling</p>															
<i>S109</i>	decimal	0–2	1	<p>Selects the 56K operating mode.</p> <p>0 = K56flex mode (V.90 disabled)            1 = Dual mode (K56flex or V.90)            2 = V.90 mode (K56flex disabled)</p>															

## Result Codes

In command mode your modem can send responses called *result codes* to your computer. Result codes are used by communications programs and can also appear on your monitor.

<u>Terse</u>	<u>Verbose</u>	<u>Description</u>
0	OK	Command executed
1	CONNECT	Modem connected to line
2	RING	Ring signal detected
3	NO CARRIER	Carrier signal lost or not detected
4	ERROR	Invalid command
5	* CONNECT 1200	Connected at 1200 bps
6	NO DIALTONE	No dial tone detected
7	BUSY	Busy signal detected
8	NO ANSWER	No answer at remote end
10	* CONNECT 2400	Connected at 2400 bps
11	* CONNECT 4800	Connected at 4800 bps
12	* CONNECT 9600	Connected at 9600 bps
13	* CONNECT 14400	Connected at 14400 bps
14	* CONNECT 19200	Connected at 19200 bps
24	* CONNECT 7200	Connected at 7200 bps
25	* CONNECT 12000	Connected at 12000 bps
26	* CONNECT 16800	Connected at 16800 bps
40	* CONNECT 300	Connected at 300 bps
55	* CONNECT 21600	Connected at 21600 bps
56	* CONNECT 24000	Connected at 24000 bps
57	* CONNECT 26400	Connected at 26400 bps
58	* CONNECT 28800	Connected at 28800 bps
59	* CONNECT 31200	Connected at 31200 bps
60	* CONNECT 33600	Connected at 33600 bps
70	* CONNECT 32000	Connected at 32000 bps, 56K rate
71	* CONNECT 34000	Connected at 34000 bps, 56K rate
72	* CONNECT 36000	Connected at 36000 bps, 56K rate
73	* CONNECT 38000	Connected at 38000 bps, 56K rate
74	* CONNECT 40000	Connected at 40000 bps, 56K rate
75	* CONNECT 42000	Connected at 42000 bps, 56K rate
76	* CONNECT 44000	Connected at 44000 bps, 56K rate
77	* CONNECT 46000	Connected at 46000 bps, 56K rate
78	* CONNECT 48000	Connected at 48000 bps, 56K rate
79	* CONNECT 50000	Connected at 50000 bps, 56K rate
80	* CONNECT 52000	Connected at 52000 bps, 56K rate
81	* CONNECT 54000	Connected at 54000 bps, 56K rate
82	* CONNECT 56000	Connected at 56000 bps, 56K rate
88	DELAYED	Delay is in effect for the dialed number
89	BLACKLISTED	Dialed number is blacklisted

\* EC is added to these result codes when the extended result codes configuration option is enabled. EC is replaced by one of the following codes, depending on the type of error control connection:

V42bis —V.42 error control (LAP-M) and V.42bis data compression

V42 —V.42 error control (LAP-M) only

MNP5 —MNP 4 error control and MNP 5 data compression

MNP4 —MNP 4 error control only

NoEC —No error control protocol).

<i>Terse</i>		<i>Verbose</i>	<i>Description</i>
90		<i>BLACKLIST FULL</i>	Blacklist is full
100	*	<i>CONNECT 28000</i>	Connected at 28000 bps, 56K rate (V.90)
101	*	<i>CONNECT 29333</i>	Connected at 29333 bps, 56K rate (V.90)
102	*	<i>CONNECT 30666</i>	Connected at 30666 bps, 56K rate (V.90)
103	*	<i>CONNECT 33333</i>	Connected at 33333 bps, 56K rate (V.90)
104	*	<i>CONNECT 34666</i>	Connected at 34666 bps, 56K rate (V.90)
105	*	<i>CONNECT 37333</i>	Connected at 37333 bps, 56K rate (V.90)
106	*	<i>CONNECT 38666</i>	Connected at 38666 bps, 56K rate (V.90)
107	*	<i>CONNECT 41333</i>	Connected at 41333 bps, 56K rate (V.90)
108	*	<i>CONNECT 42666</i>	Connected at 42666 bps, 56K rate (V.90)
109	*	<i>CONNECT 45333</i>	Connected at 45333 bps, 56K rate (V.90)
110	*	<i>CONNECT 46666</i>	Connected at 46666 bps, 56K rate (V.90)
111	*	<i>CONNECT 49333</i>	Connected at 49333 bps, 56K rate (V.90)
112	*	<i>CONNECT 50666</i>	Connected at 50666 bps, 56K rate (V.90)
113	*	<i>CONNECT 53333</i>	Connected at 53333 bps, 56K rate (V.90)
114	*	<i>CONNECT 54666</i>	Connected at 54666 bps, 56K rate (V.90)

\* *EC* is added to these result codes when the extended result codes configuration option is enabled. *EC* is replaced by one of the following codes, depending on the type of error control connection:

*V42bis* —V.42 error control (LAP-M) and V.42bis data compression

*V42* —V.42 error control (LAP-M) only

*MNP5* —MNP 4 error control and MNP 5 data compression

*MNP4* —MNP 4 error control only

*NoEC* —No error control protocol).

**5**

***Remote  
Configuration***

## Introduction

Remote configuration is a network management tool that allows you to configure modems anywhere in your network from one location. With password-protected remote configuration, you can issue AT commands to a remote MT5634MSV modem for maintenance or troubleshooting as if you were on-site.

## Basic Procedure

The following steps are valid regardless of whether the connection is established by the local or the remote Multi-Tech modem.

1. Establish a data connection with a remote MT5634MSV modem.
2. Send three remote configuration escape characters followed by **AT** and the setup password, and press ENTER. Example: `%%%ATMTSMODEM<CR>`. You have four tries to enter the correct password before being disconnected. If the password is correct, the remote modem responds with  
**OK**
3. You can now send AT commands to configure the remote modem.
4. When you have finished configuring the remote modem, save the new configuration by typing `AT&W0<CR>`, then type `ATO<CR>` to exit remote configuration. You can then break the connection in the normal way.

---

**CAUTION:** If you hang up while you are in remote configuration mode, it may lock up the remote modem.

---

## Setup

Multi-Tech modems are shipped with a default setup password (MTSMODEM). Because anyone who has an owner's manual knows the default setup password, for security you should change the password and possibly also the remote configuration escape character.

### ***Changing the Setup Password***

1. Open a data communications program such as HyperTerminal.
2. In the terminal window, type `AT#SMTSMODEM` (or `AT#Syyyyyy` if you have replaced the MTSMODEM password with yyyyyy) and press ENTER. The modem responds with **OK** if the setup password is correct, and **ERROR** if it is wrong.
3. To change the password, type `AT#S=yyyyyy`, where yyyyyy stands for the password, and press ENTER. The password can include any keyboard character, and must be one to eight characters long. The modem responds with **OK**.
4. The new password is saved automatically. You can now either enter more AT commands or exit the data communications program. The next time you remotely configure the modem you must use the new setup password.



**Note:** You can only change the setup password locally; you cannot do it remotely. Also, passwords are case sensitive. The next time you enter the password, it must be in the same case as you set it up.

---

### ***Changing the Remote Escape Character***

To increase security, you can change a remote modem's remote configuration escape character. The remote configuration escape character is stored in register **S9**. The factory default is 37, which is the ASCII code for the percent character (%). Setting **S9** to 0 (zero) disables remote configuration entirely—but if you do this remotely, you won't be able to change it back remotely!

1. Establish a remote configuration link with the remote modem as described in "Basic Procedure."
2. Type **ATS9=*n***, where *n* is the ASCII code for the new remote configuration escape character, then press ENTER.
3. Save the new value by typing **AT&W** and pressing ENTER.
4. Type **ATO<CR>** to exit remote configuration.

Multi-Tech modems are shipped with a default setup password (MTSMODEM). Because anyone who has an owner's manual knows the default setup password, for security you should change the password and possibly also the remote configuration escape character.





**6**

***Solving  
Problems***

## Introduction

Your modem was thoroughly tested at the factory before it was shipped. If you are unable to make a successful connection, or if you experience data loss or garbled characters during your connection, it is possible that the modem is defective. However, it is more likely that the source of your problem lies elsewhere. The following symptoms are typical of problems you might encounter:

- None of the LEDs light when the modem is on.
- The modem does not respond to commands.
- The modem dials but is unable to make a connection.
- The modem disconnects while online.
- The modem cannot connect when answering.
- File transfer is slower than it should be.
- Data is being lost.
- There are garbage characters on the monitor.
- The modem doesn't work with Caller ID.
- Fax and data software can't run at the same time.

If you experience problems, please check the following possibilities before calling Technical Support (see Appendix D).

## None of the Indicators Light

When you turn on the modem, the LED indicators on the front panel should flash briefly as the modem runs a self-test. If the LEDs remain off, the modem is probably not receiving power.

- ✓ Make sure the modem's power switch is on, especially if you normally turn on the modem by turning on a power strip.
- ✓ If the power supply is plugged into a power strip, make sure the power strip is plugged in and its power switch is on.
- ✓ Make sure the power supply module is firmly connected to the modem and to the wall outlet or power strip.
- ✓ If the power strip is on and the modem switch is on, try moving the modem power supply to another outlet on the power strip.
- ✓ Test that the outlet is live by plugging a lamp into it.
- ✓ The modem or power supply may be defective. If you have another Multi-Tech modem, try swapping modems. If the problem goes away, the first modem or power supply may be defective. Call Tech Support for assistance.

---

**CAUTION:** Do not under any circumstances replace the power supply module with one designed for another product, as it can damage the modem and void your warranty.

---

## The Modem Does Not Respond to Commands

- ✓ Make sure the modem is plugged in and turned on. (See “None of the Indicators Light.”)
- ✓ Make sure you are issuing the modem commands from the data communications software, either manually in terminal mode or automatically by configuring the software. (You cannot send commands to the modem from the DOS prompt.)
- ✓ Make sure you are in terminal mode in your data communications program, then type **AT** and press **ENTER**. If you get an *OK* response, your connections are good and the problem likely is in the connection setup in your communications software.
- ✓ Try resetting your modem by turning it off and on. If you are using DOS or Windows 3.1 communications software, make sure the initialization string includes **&F** as the first command, to cancel any “leftover” command that could affect the modem’s operation.
- ✓ If you don’t get an *OK*, the problem may still be in the communications software. Make sure you have done whatever is necessary in your software to make a port connection. Not all communications programs connect to the COM port automatically. Some connect when the software loads and remain connected until the program terminates. Others can disconnect without exiting the program. The modem’s TR indicator lights to show that the software has taken control of the modem through the COM port.
- ✓ Your communications software settings may not match the physical port the modem is connected to. The serial cable might be plugged into the wrong connector—check your computer documentation to make sure. Or you might have selected a COM port in your software other than the one the modem is physically connected to—compare the settings in your software to the physical connection.
- ✓ If the modem is on, the cable is plugged into the correct port, the communications software is configured correctly, and you still don’t get an *OK*, the fault might be in the serial cable. Make sure it is firmly connected at both ends.
- ✓ Is this the first time you have used the cable? If so, it may not be wired correctly. Check the cable description on the packaging to make sure the cable is the right one for your computer.
- ✓ Peripheral expansion cards, such as sound and game cards, might include a serial port preconfigured as COM1 or COM2. The extra serial port, or the card itself, may use the same COM port, memory address, or interrupt request (IRQ) as your communications port. Be sure to disable any unused ports.

To look for address or IRQ conflicts if you use Windows 3.1x, select **File | Run** in Program Manager, type **MSD**, and press **ENTER**. Then select **Mouse, COM Ports**, and **IRQ Status** and note the addresses and IRQs that are in use. If you find an IRQ conflict, note which IRQs are not being used, then change one of the conflicting devices to use one of the unused IRQs. If you find an address conflict, change the address of one of the conflicting devices.

To change a port address or IRQ in Windows 3.1x, double-click the Control Panel icon, then the Ports icon. Click on the port you want to change, click **Settings**,

click **Advanced**, and select the new port address and/or interrupt. If you wish to use COM3 or COM4, note that COM3 shares an IRQ with COM1, as does COM4 with COM2, so you should change their IRQs to unused ones, if possible.

If you use Windows 95, right-click on My Computer, select **Properties** from the menu, click on the **Device Manager** tab, double-click on **Ports**, then double-click on the communications port your modem is connected to. In the port's **Properties** sheet, click on the **Resources** tab to see the port's input/output range and interrupt request. If another device is using the same address range or IRQ, it will appear in the **Conflicting Device List**. Uncheck **Use automatic settings** to change the port's settings so they do not conflict with the other device, or select the port the conflicting device is on and change it instead. If you need to open your computer to change switches or jumpers on the conflicting device; refer to the device's documentation.

- ✓ The serial port might be defective. If you have another serial port, install the modem on it, change the COM port setting in your software, and try again.
- ✓ The modem might be defective. If you have another Multi-Tech modem, try swapping modems. If the problem goes away, the first modem is possibly defective. Call Tech Support for assistance (see Appendix D).

## The Modem Dials But Cannot Connect

There can be several reasons the modem fails to make a connection. Possibilities include:

- lack of a physical connection to the telephone line.
- a wrong dial tone.
- a busy signal.
- a wrong number.
- no modem at the other end.
- a faulty modem, computer, or software at the other end.
- incompatibility between modems.

You can narrow the list of possibilities by using extended result codes. Extended result codes are enabled by default. If they have been disabled, include **V1X4** in the modem's initialization string, or in terminal mode enter **ATV1X4** and press ENTER. When you dial again, the modem will report the call's progress.

- ✓ If the modem reports *NO DIALTONE*, check that the modem's telephone line cable is connected to both the modem's LINE jack (not the PHONE jack) and the telephone wall jack. If the cable looks secure, try replacing it. If that doesn't work, the problem might be in your building's telephone installation. To test the building installation, plug a telephone into your modem's telephone wall jack and listen for a dial tone. If you hear a dial tone, your modem might be installed behind a company phone system (PBX) with an internal dial tone that sounds different from the normal dial tone. In that case, the modem might not recognize the dial tone and might treat it as an error. Check your PBX manual to see if you can change the internal dial tone; if you can't, change your modem's initialization string to replace **X4** with **X3**, which will cause the modem to ignore dial tones (note, however, that **X3** is not allowed in some countries, such as France and Spain).

- ✓ If the modem reports *BUSY*, the other number might be busy, in which case you should try again later, or it might indicate that you have failed to add a **9**, prefix to the phone number if you must dial 9 for an outside line.

If you must dial 9 to get an outside line, the easiest way to dial it automatically is to include it in the modem's dial prefix, e.g., **ATDT9**. Note the comma, which inserts a pause before the number is dialed. By inserting **9**, into the dial prefix, you do not have to include it in each directory entry.

To change the dial prefix in Windows 95 HyperTerminal, select **Connect** from the **Call** menu, click **Dialing Properties**, and type **9** in the local and long distance boxes in **How I dial from this location**.

- ✓ If the modem reports *NO ANSWER*, the other system has failed to go off-hook, or you might have dialed a wrong number. Check the number.
- ✓ If the modem reports *NO CARRIER*, the phone was answered at the other end, but no connection was made. You might have dialed a wrong number, and a person answered instead of a computer, or you might have dialed the correct number but the other computer or software was turned off or faulty. Check the number and try again, or try calling another system to make sure your modem is working. Also, try calling the number on your telephone. If you hear harsh sounds, then another modem is answering the call, and the modems might be having problems negotiating because of modem incompatibilities or line noise. Try connecting at a lower speed.

## The Modem Disconnects While Online

- ✓ If you have Call Waiting on the same phone line as your modem, it can interrupt your connection when someone tries to call you. If you have Call Waiting, disable it before each call. In most telephone areas in North America, you can disable Call Waiting by preceding the telephone number with **\*70** (check with your local telephone company).

You can automatically disable Call Waiting by including the disabling code in the modem's dial prefix (e.g., **ATDT\*70**,—note the comma, which inserts a pause before the number is dialed). To change the dial prefix in Windows Terminal, select **Settings | Modem Commands**. To change it in Windows 95 HyperTerminal, select **Connect** from the **Call** menu, click **Dialing Properties**, check **This location has Call Waiting**, and select the correct code for your phone service.

- ✓ If you have extension phones on the same line as your modem, you or someone else can interrupt the connection by picking up another phone. If this is a frequent problem, disconnect the extension phones before using the modem, or install another phone line especially for the modem.
- ✓ Check for loose connections between the modem and the computer, the telephone jack, and AC power.
- ✓ You might have had a poor connection because of line conditions or the problem might have originated on the other end of the line. Try again.
- ✓ If you were online with a BBS or an online service like CompuServe, it might have hung up on you because of lack of activity on your part or because you exceeded your time limit for the day. Try again.

## The Modem Cannot Connect When Answering

- ✓ Autoanswer might be disabled. Turn on autoanswer in your datacomm program or send the command `ATS0=1` (`ATS0=2` if you have Caller ID service) to your modem in terminal mode.

## File Transfer Is Slower Than It Should Be

- ✓ You might have an older UART. For best throughput, install a 16550AFN UART or a Multi-Tech ISI serial port card. See the "Quick Start" chapter for information on how to identify your UART.
- ✓ If you are running under Windows 3.1 and have a 16550AFN UART, you must replace the Windows serial driver, `COMM.DRV`, to take full advantage of the UART's speed.
- ✓ If you are using a slow transfer protocol, such as Xmodem or Kermit, try Zmodem or Ymodem/G instead.
- ✓ Is your line noisy? If there is static on your line, the modem has to resend many blocks of data to insure accuracy. You must have a clean line for maximum speed.
- ✓ Are you downloading a compressed file with MNP 5 hardware compression enabled? Since hardware data compression cannot compress a file already compressed by an archiving program, the transfer can be marginally slower with data compression enabled than with it disabled.
- ✓ Does your Internet service provider (ISP) use the same 56K protocol as your modem? The default setting of your modem is to connect using either the K56flex or the V.90 protocol, depending on which one the ISP modem is using. If your ISP uses the X2 protocol, the maximum speed you will be able to connect at is 33,600 bps. Check with your ISP to see which protocols it supports, and check the Multi-Tech Web site for the latest developments in V.90.
- ✓ Try entering the `&V1` command to display information about the last connection, making a screen print of the connection statistics, and checking for parameters that might be unacceptable.

## Data Is Being Lost

- ✓ If you are using data compression and a high speed serial port, set the serial port baud rate to four times the data rate.
- ✓ Your UART might not be reliable at serial port speeds over 9600 bps or 19,200 bps. Turn off data compression, reset your serial port speed to a lower rate, or replace your serial port with a faster one.
- ✓ Make sure the flow control method you selected in software matches the method selected in the modem. If you are using the modem with a Macintosh, you might have the wrong cable for hardware flow control.



- ✓ If you are running under Windows 3.1 and have a 16550AFN UART, you might need to turn on the 16550's data buffers and/or replace the Windows serial driver, COMM.DRV.
- ✓ Try entering the **&V1** command to display information about the last connection, making a screen print of the connection statistics, and checking for parameters that might be unacceptable.

### There Are Garbage Characters on the Monitor

- ✓ Your computer and the remote computer might be set to different word lengths, stop bits, or parities. If you have connected at 8-N-1, try changing to 7-E-1, or vice-versa, using your communications software.
- ✓ You might be experiencing line noise. Enable error correction, if it is disabled, or hang up and call again; you might get a better connection the second time.
- ✓ At speeds above 2400 bps, the remote modem might not use the same transmission or error correction standards as your modem. Try connecting at a slower speed or disabling error correction. (With no error correction, however, line noise can cause garbage characters.)
- ✓ Try entering the **&V1** command to display information about the last connection, making a screen print of the connection statistics, and checking for parameters that might be unacceptable.

### The Modem Doesn't Work with Caller ID

- ✓ Caller ID information is transmitted between the first and second rings, so if autoanswer is turned off (**S0=0**) or if the modem is set to answer after only one ring (**S0=1**), the modem will not receive Caller ID information. Check your initialization string, and if necessary change it to set the modem to answer after the second ring (**S0=2**).
- ✓ Make sure that you have Caller ID service from your telephone company.

### Fax and Data Software Can't Run at the Same Time

- ✓ Communications devices can be accessed by only one application at a time. Under DOS or Windows 3.1x, you can run either your fax software or your datacomm software, but not both at the same time, unless you have a special communications device management application. In Windows 95, you can have data and fax communication applications open at the same time, but they cannot use the same modem at the same time.



**7**

***PhoneTools***

# Introduction

To retrieve messages and faxes from the MessageSaver, you must install PhoneTools on your computer. A compact disc containing PhoneTools is included with the MessageSaver.

This chapter explains how to use PhoneTools. For more information about how to use PhoneTools, see the the PhoneTools online help, which can be accessed by clicking the **Help** button or pressing F1. Topics include:

- Installing PhoneTools
- Status Bar
- Phone Module
- Voice Module
- Answerphone
- Independent mode
- Fax Module
- Inbox and Outbox Management
- Phone Book
- Terminal Emulation Module
- Data File Transfer

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**Note:** The illustrations in this manual show PhoneTools in a Windows® 95 environment. In other Windows operating systems, the screens may change significantly. This will not impair the program's functionality.

---

## Installing PhoneTools

1. Turn on your computer and run Windows.
2. Insert the compact disc containing the program into your CD-ROM drive.
3. Using File Manager or Explorer, locate the file Setup.exe in the root directory of the compact disc, and double-click it. The main setup screen appears.

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**Note:** Setup.exe tries to match your computer's color settings. If the colors look strange on your computer, try Setup16.exe for 16-bit color (65536 colors), or Setup8 for 8-bit color (256 colors).

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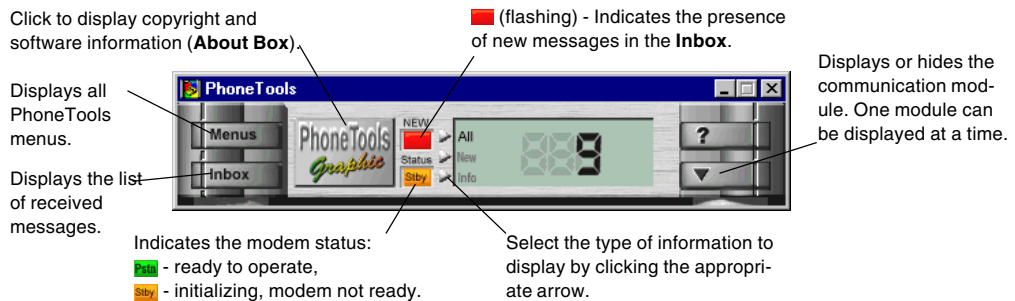
4. Click the **PhoneTools** button to start installing PhoneTools. The installation wizard will guide you through the procedure. During installation, if you choose to enable the **Find modem** option, make sure that the modem is connected and turned on.

## Using PhoneTools' Status Bar

The Status Bar gives access to all the functions featured in PhoneTools. You can select a menu option through the **Menu** button.

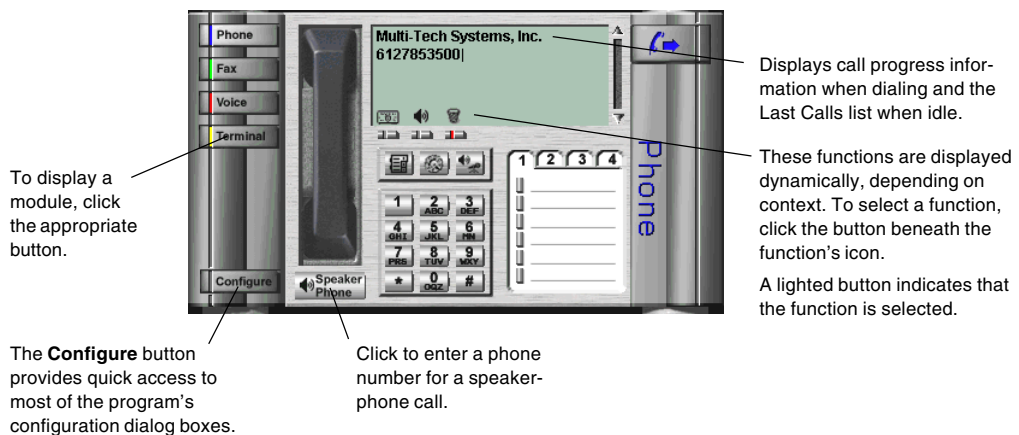
The "LCD" screen displays PhoneTools status information. Click the  arrow cursors to select the type of information to be displayed:

- The **All** and **New** selections indicate the number of received documents. To view new received documents in the **Inbox**, click the **Inbox** button.
- **Info** displays warning messages and modem status.





## Phone Module



Use the Phone module to make phone calls, to select Speakerphone mode, to control Speakerphone volume, and to configure certain PhoneTools operations.



## Making a Phone Call

You can enter the phone number for a call using any of several methods. After selecting the number, you must click  or the phone handset to start dialing.

- Click  to open the **Copy From Phone Book** dialog box, which you can use to extract existing phone numbers from the Phone Book.

- Click  to display the **Dial Box**. Enter the name and phone number of the person you want to call, then click **OK**.
- Click  to display four tabs containing six Quick Dial entries each. To select a number using Quick Dial, click the button next to the entry.
- Double-click an entry in the Last Calls list to select its number.
- Enter the number using the PhoneTools keypad or your keyboard.


Click here to hang up.




When using the Speakerphone, adjust the volume as needed by moving the sliders up or down with your mouse.


## Using the Speakerphone

The Speakerphone feature enables you to talk without using your phone handset.

To make and receive phone calls in Speakerphone mode, click the button located under the Speakerphone icon .

Click  (toggle button) to display the speaker and microphone volume control sliders.

Three functions become available when you are connected:

 **Mute** function. Cuts your microphone off, allowing you to hear your correspondent without being heard.


**HLD Hold**. Cuts your microphone and speaker off.

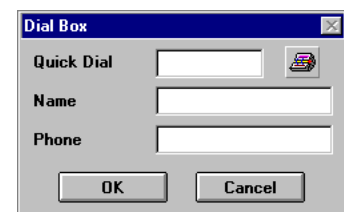
 **Fax Reception Mode**. Allows you to start receiving a fax.

## Making Quick Dial Entries


Quick Dial lets you store frequently used phone numbers so that you can make phone calls quickly.

**To assign a phone number to an entry**

1. Click  to display the Quick Dial entries if they are hidden.
2. Click an entry to open the **Dial Box**.
3. In the **Quick Dial** box, type a name for the entry.
4. In the **Name** box, type the full name of the person you want to call.
5. In the **Phone** box, type the phone number that will be selected when you click the entry's button.



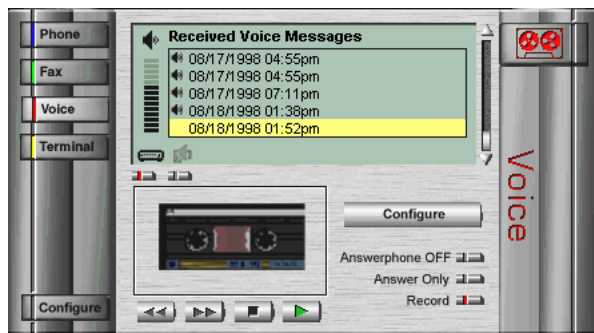
6. Click **OK**.

**Tip:** You can copy an entry from the Phone Book by clicking  in the **Dial Box**.

## Voice Module

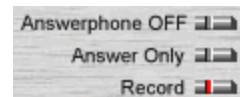
Click the **Voice** button to select the Voice module. The Voice module has a feature called Answerphone, which enables a computer equipped with a MessageSaver modem to be used as an answering machine. Answerphone supports two modes of operation:

- **Answer Only** mode plays an announcement, then hangs up.
- **Record** mode plays an announcement, then records the caller's message.



### Activating and Deactivating Answerphone


To turn Answerphone on, click the button corresponding to the desired mode (**Answer Only** or **Record**). The active mode is signalled by a red indicator: .



To turn Answerphone off, click the **Answerphone OFF** button.

To be operational, each mode requires the creation and selection of a specific minimum set of elements (an announcement and access code) that will be implemented by Answerphone.

### Setting up Answerphone

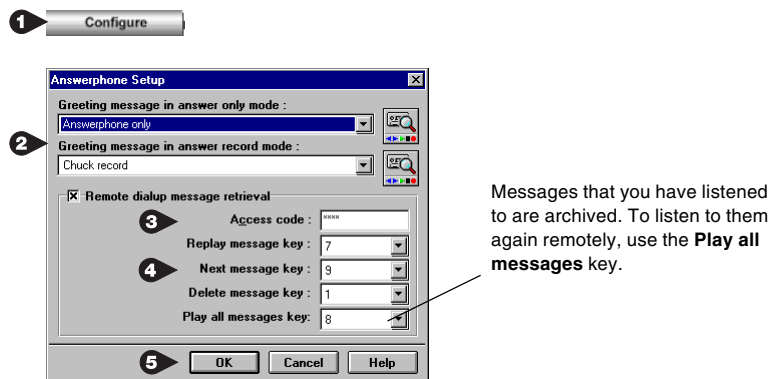
1. Click  to access the **Answerphone Setup** dialog box.
2. Select a greeting message (announcement) for the mode you want to use. If you do not want to use the supplied pre-recorded messages, record a custom announcement.
3. Type an access code of up to four digits for remote message retrieval.
4. Select the phone keys you will use for remote message retrieval.

**Warning:** The default message retrieval keys for Answerphone may be different from those used when the MessageSaver is in Independent mode. If they are, you should change the Answerphone keys to conform to those used in Independent mode, as follows:

Replay message key: 7  
Next message key: 9  
Delete message key: 1  
Play all messages key: 8

---

5. Click OK to exit the **Answerphone Setup** dialog box.



### Setting Up the Answer Only Mode

1. In the Voice module, click **Answer Only** to activate Answer Only mode. Then, click **Configure** to display the **Answerphone Setup** dialog box (see above).
2. In the **Greeting message in answer only mode** box, select the greeting message to be used, or record a new message.
3. Click **OK** to exit the **Answerphone Setup** dialog box.

### Setting Up the Answer/Record Mode

1. In the Voice module, click to activate Answer/Record mode. Then, click **Configure** to display the **Answerphone Setup** dialog box.
2. In the **Greeting message in answer record mode** box, select the greeting message (announcement) to be used, or record a new message.
3. Select **Remote dialup message retrieval** if you want to be able to retrieve your messages from a remote phone.
3. In the **Access code** box, enter a four-digit access code for remote dialup message retrieval.
4. Click **OK** to exit the **Answerphone Setup** dialog box.




## Listening to Received Messages from a Remote Phone


To remotely listen to messages using Answerphone, PhoneTools must be running and the **Record** button must be enabled.


**Note:** You can also listen to messages remotely when PhoneTools is not running, if the MessageSaver is in Independent mode. See Chapter 3.




1. Call your MessageSaver from a remote touchtone phone.
2. Dial the the access code number while the greeting is playing. All received voice messages will play back in order.
3. Use the phone keys you defined in the **Remote dialup message retrieval** section to replay, skip, or delete a message, or to listen to the previously heard messages.

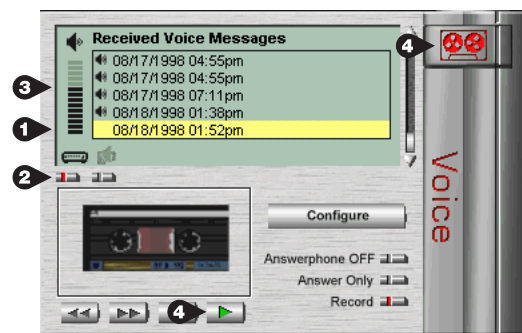
## Listening to Received Messages in PhoneTools

1. In the **Received Voice Messages** list, click the message you wish to play.
2. Select the playback device to be used by clicking the button beneath its icon (the selected device has a red LED: ).

 Plays messages over the modem's built-in speaker

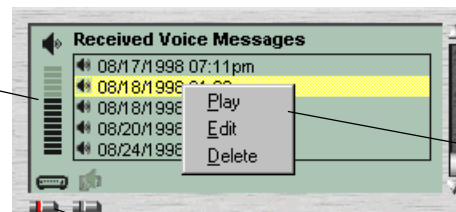
 Plays messages through the speakers connected to your sound card.

3. Adjust the playback sound level by clicking on the volume control vertical gauge.
4. To start playing the message, click  or . The icon  before a message indicates that it has been played.



**Note:** Received messages can also be accessed from the **Inbox**.

To adjust the playback sound level, click on the vertical gauge.






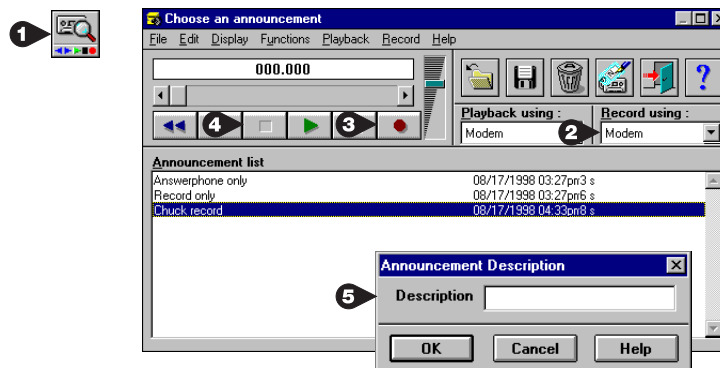
Click on a list item with your right mouse button to display this menu.

Select the playback and recording device to be used: modem speaker or sound card.

## Recording an Announcement

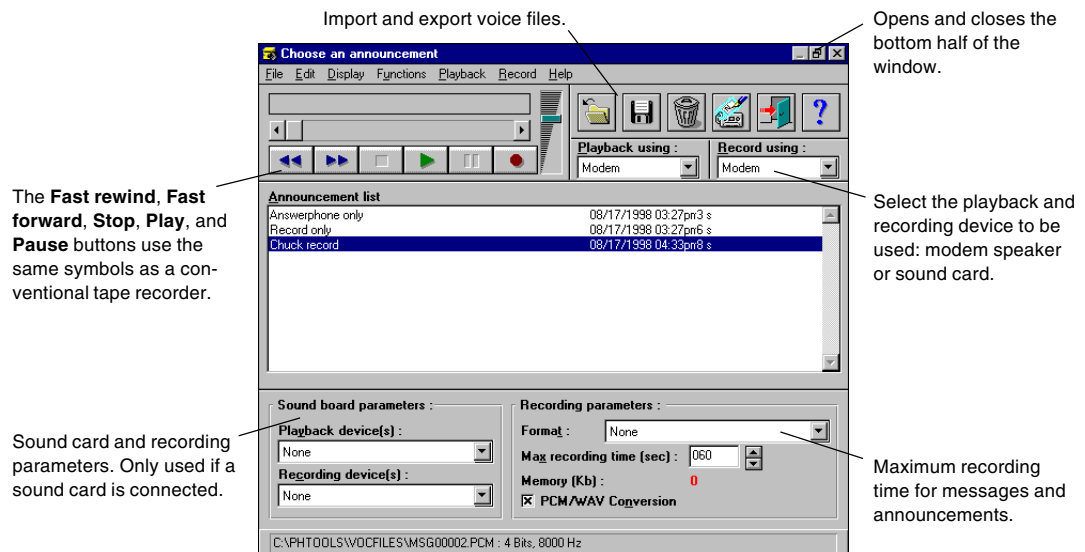
Announcements are used to greet and guide the caller. You can use the pre-recorded announcements, or you can record your own custom announcements.

1. In the **Answerphone Setup** dialog box, click  to open the **Choose an announcement** dialog box.
2. Select the record peripheral (modem or sound card).
3. Click  to start recording.
4. Click  to stop recording.
5. The **Announcement Description** dialog box prompts you to type a label for the announcement. This label should allow you to readily identify the message in the message list.
6. Click **OK** to exit the **Announcement Description** dialog box.
7. Close the **Choose an announcement** window.



## Changing Recording Parameters

The **Choose an announcement** dialog box can be expanded to configure recording parameters by clicking **Parameters** in the **Display** menu.



## Independent Mode

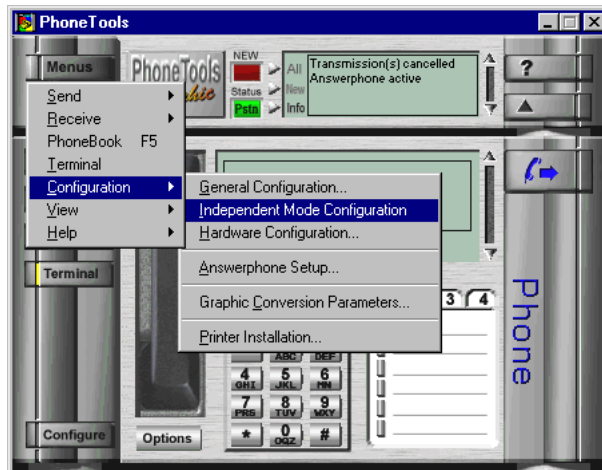
### How Does It Work?

When your PC is on and PhoneTools is running, your MessageSaver modem operates like a standard modem. However, your MessageSaver can also operate in *Independent mode*. In Independent mode the MessageSaver can receive and store in its flash memory incoming faxes and voice messages when PhoneTools is not running, and even when the PC is turned off.

### Configuring and Controlling Independent Mode Operation

Setting up and monitoring the modem's Independent mode is performed through two dialog boxes: the **Independent Mode Configuration** dialog box, which is used to configure Independent mode, and the **Independent Mode Control** dialog box, which is used to operate Independent mode functions.

To access the **Independent Mode Configuration** dialog box, click **Menu** to open the menu list, click **Configuration**, and then click **Independent Mode Configuration**. Alternately, click **Configure** to open the **Configuration** menu, and then click **Independent Mode Configuration**.



Before using Independent mode for the first time, you must download a greeting message to the modem.

By default, Independent mode is automatically enabled when you exit PhoneTools. This can be changed in the **Independent Mode Configuration** dialog box, as described below.

## Activating and Configuring Independent Mode

The **Independent Mode Configuration** dialog box enables you to select Independent mode operating options and choose how Independent mode will be enabled.

### Selecting an Announcement

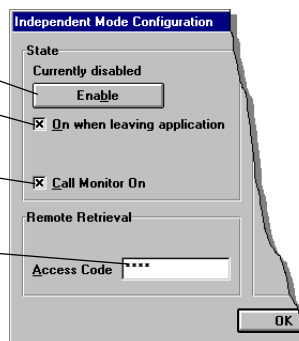
A greeting message, or announcement, must be saved to the MessageSaver before Independent mode will work. The announcement can be recorded directly on the MessageSaver from a remote phone (see Chapter 3) or downloaded from PhoneTools to the modem.

Click to manually enable or disable Independent mode.

Select to automatically enable Independent mode when you exit PhoneTools.

Select to turn on the modem speaker while a caller is leaving a message, to allow call screening.

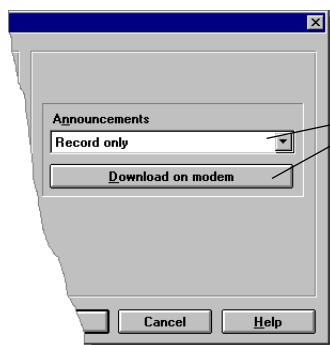
Type a four-digit access code to use when retrieving messages remotely.



To record an announcement from a remote phone, see “Controlling the MessageSaver Remotely” in Chapter 3. To record an announcement in PhoneTools for downloading to the MessageSaver, see “Recording an Announcement” in this chapter.

#### To select an announcement in PhoneTools

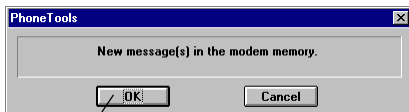
1. Open the **Independent Mode Configuration** dialog box.
2. Click the down arrow in the **Announcements** box, and select an announcement.
3. Click **Download on modem** to store the announcement on the MessageSaver.




To use a PhoneTools announcement, select the announcement from this list, then click **Download on modem**.

## Managing Stored Documents: Independent Mode Control Dialog Box

When you start PhoneTools, Independent mode is automatically disabled and the MessageSaver is controlled by PhoneTools. The following message notifies you if faxes or voice messages have been received while in Independent Mode:



Click **OK** to access the **Independent Mode Control** dialog box.

You can also access the **Independent Mode Control** dialog box from the PhoneTools **Inbox** by clicking .

The **Independent Mode Control** dialog box enables you to access the documents (faxes and voice messages) received by the MessageSaver while in Independent mode.

Indicates the percentage and amount of free memory left on the modem.

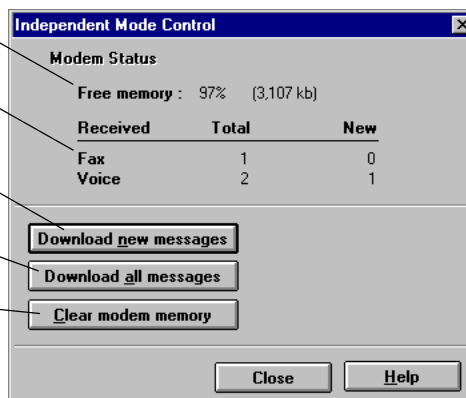
Indicates the number of received messages. **New** messages are those that haven't been copied to PhoneTools.

Click to copy new documents to PhoneTools' **Inbox**.

Click to copy *all* documents to PhoneTools' **Inbox**.

Click to clear the modem's memory.

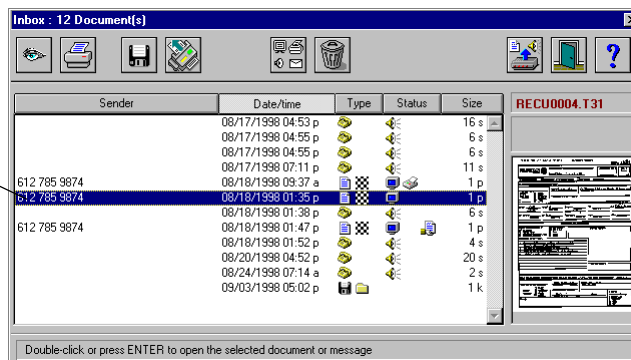
**Caution:** All documents stored in the modem's memory will be deleted, including those that have not yet been retrieved.



## Managing Stored Documents: Inbox

Documents copied from the modem to PhoneTools using the **Download new messages** or **Download all messages** button appear as new documents in PhoneTools' **Inbox**.

To view a fax or play back a message, double-click it in the document list.

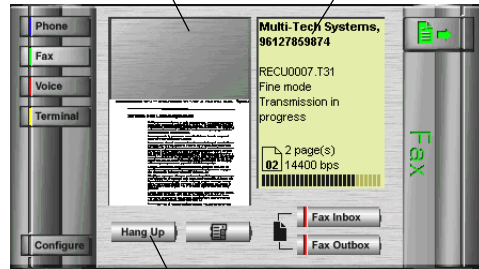


# Fax Module

Use the Fax module to create, send, receive, and manage faxes.

Thumbnail of the fax being received or sent.

Transmission information.



Click to interrupt a fax transmission.



Displays the **Send Fax** dialog box.



Displays the **Copy from PhoneBook** dialog box.



Displays the **Inbox** dialog box.



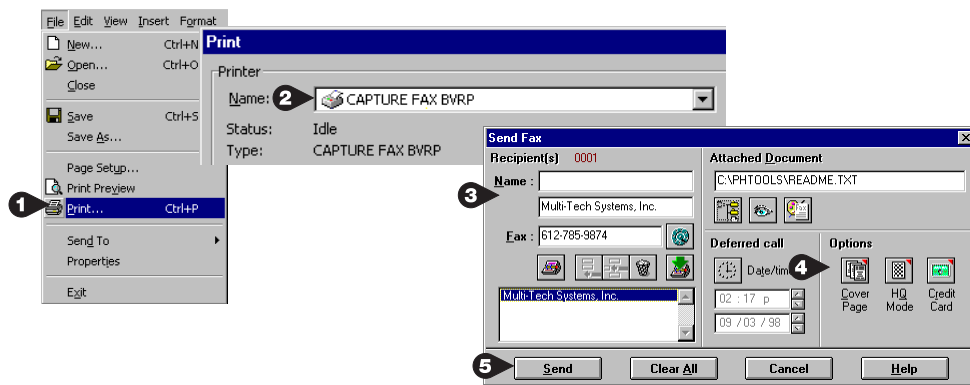
Displays the **Outbox** dialog box.

## Faxing a Document from a Windows Application




Using print capture, you can fax a document directly from the Windows application in which you've created it, without opening PhoneTools.

1. You have just created a document in a Windows application, such as a word processor, graphic editor, or spreadsheet. To fax the document, keep the application and the document open and select the **Print** command from the **File** menu.
2. Select **CAPTURE FAX BVRP** as the printer driver, then click **OK**. The **Send Fax** dialog box is displayed.
3. In the **Recipient(s)** section, type the required information or extract it from the Phone Book by clicking .
4. There are several transmission options. To enable an option, click its button:
 

Defer call to a later date/time.	Open the cover page panel.
Phone card dialing (must be set up in the <b>General Configuration</b> dialog box).	High quality fax (fine).
5. Click **Send** to start the transmission.



## Faxing a File Directly from PhoneTools

1. In PhoneTools' fax module, click  to display the **Send Fax** dialog box.
2. In the **Recipient(s)** section, type the required information or extract it from the Phone Book by clicking the **Copy from Phone Book** button .
3. In the **Attached Document** section, click the **Browse** button  and select the file to be sent.
4. Select the transmission options you want by clicking the corresponding buttons (see above).
5. Click **Send** to start the transmission.



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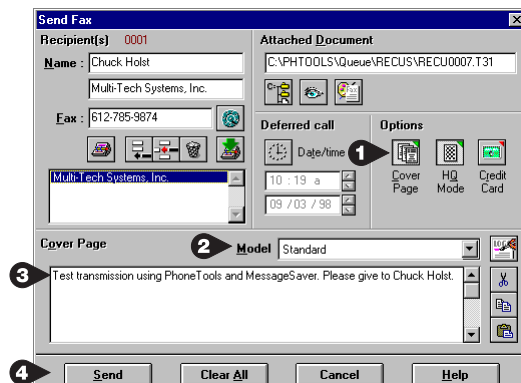
**Note:** Only graphic files (BMP, PCX, etc.) and ASCII files can be faxed directly. For other formats, use the "Faxing a Document from Any Windows Application" procedure.

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## Sending a Cover Page




Whatever method you use to prepare and send a fax, you can add a cover page or even send a cover page on its own.

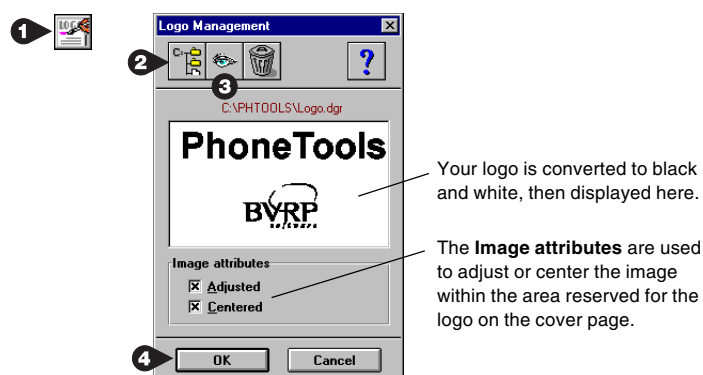
1. In the **Send Fax** dialog box, click the **Cover Page** button to display the cover page section if it is hidden.
2. In the **Model** box, select the model of cover page that you want to use.
3. In the **Cover Page** text box, type the message that you want to appear on your cover page.
4. Click **Send** to start the transmission.



### Adding a Logo to the Cover Page



You can put your own logo on the cover page. The logo should be small in size and in one of the following graphic formats: BMP, PCX, TIF, DIB, GIF, or DCX.

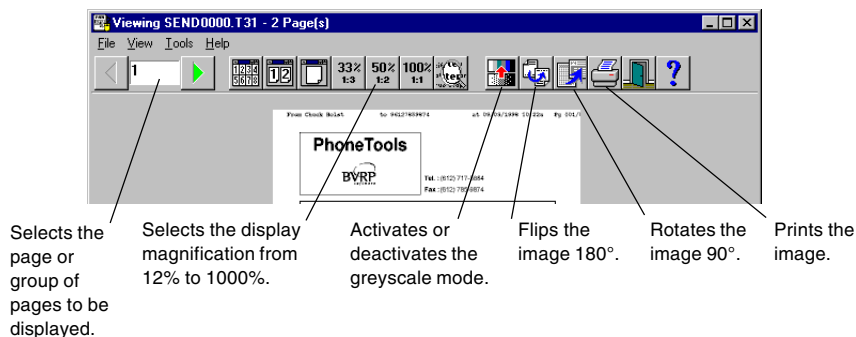
1. In the **Send Fax** dialog box, click  to display the **Logo Management** dialog box.
2. Click the **Browse** button  and select the logo graphic file. The graphic is displayed in the **Logo Management** dialog box. If the graphic is in color, it is converted to black and white.
3. Click the **Preview** button  to see how the logo will appear on the cover page.
4. Close the preview window, and then click **OK** to close the **Logo Management** dialog box.



### Viewing and Printing Faxes

Faxes can be viewed and printed not only from the Inbox and the Outbox, but by double-clicking the thumbnail view of a transmitted fax in the fax module window.

- To view a fax from either the Inbox or the Outbox, click the **View** button .
- To print a fax, click the **Print** button  in the Inbox, Outbox, or Viewing window.
- For best printing results, the print resolution should be at least 300 dpi.
- To fit the fax completely onto the page, select a 10% reduction (default setting).





# Inbox and Outbox Management

## Inbox Management

All received documents, including voice messages, faxes, and data files, are stored in the **Inbox**.

When a document is received, PhoneTools notifies you by displaying a **Document(s) received** warning (and emits a beep when this option is selected in the **Notifications** dialog box, which can be accessed by clicking the **Notifications** button in the **Communications** tab of the **General Configuration** dialog box.) Notifications are removed when the document or message is played, viewed or printed.

A double-click on a received document displays the document if it is a fax or a data file. If it is a voice message, then a double-click displays the **Voice Player** dialog box and plays the message.

The **Inbox** can contain up to 1024 documents, which are not limited in size. You should delete unnecessary documents and files. You can store copies of faxes by either printing them or by saving them to disk in another directory. Voice messages can also be saved to disk.

Saves selected documents in another format.

Displays or prints the document.

Displays the **Send Fax** dialog box for retransmission of the selected document.

Changes the status of the selected documents.

Deletes the selected documents.

Displays the file name.

Displays a reduced view of the selected fax.

Click the heading buttons to sort the list.

Double-click or press ENTER to open the selected document or message

The type and status of a document are indicated by icons:

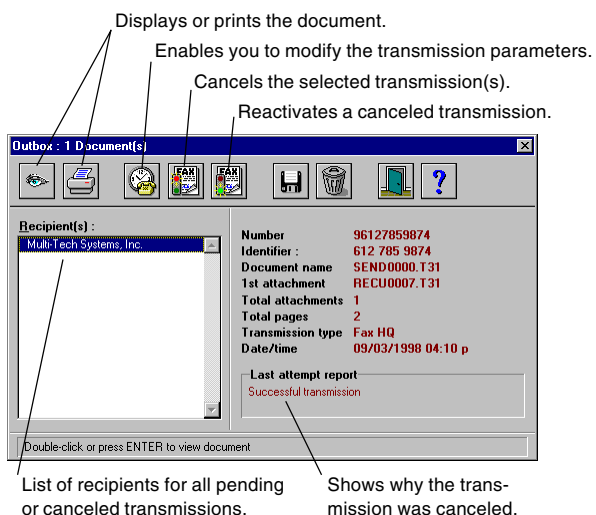
	HQ (fine) fax		Viewed
	Standard fax		Printed
	Data file		Re-sent
	Voice message		Played

## Outbox Management

All transmissions are stored in the **Outbox**, which acts as a transmission queue. If the transmission runs smoothly, then the document is deleted and the information is recorded in the **Send Log**.

If a wrong number or other error occurs, the transmission is canceled and the document is retained to allow you to correct the error. To confirm that a document was sent correctly to a recipient, open the **Send Log**, where information about past transmissions is available.

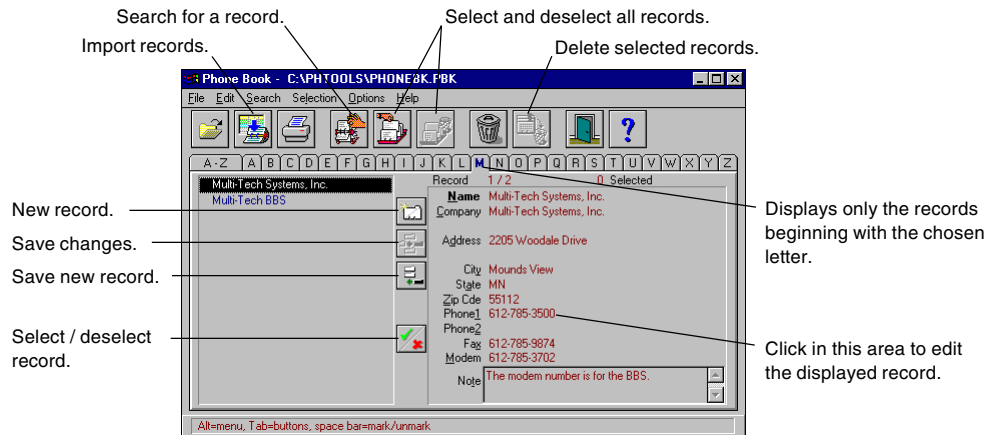
If the option **Keep finished transmissions** is checked on the **Communication** tab of the **General Configuration** dialog box, then transmissions that are added to the **Outbox** are not deleted after being transmitted. The **Outbox** is limited to 256 transmissions. You should delete regularly the documents stored in the **Outbox** to avoid reaching this limit.



## Phone Book



The Phone Book stores the name, the address, and the phone, fax, and modem numbers for each recipient.

To open the Phone Book, click **Menus**, then click **PhoneBook**.



## Creating New Records

When you first access the Phone Book, it is empty.

1. To create a new record, click .
2. Enter the information in the editing area of the record.
3. When you have finished entering information, click  to save the new record. If this icon is grayed out, it means you have not yet entered the minimum information required to complete a record; be sure to enter at least the name.

## Importing Existing Records

If records already exist as files structured in a standard database or spreadsheet format, you can import these records instead of typing them manually. For a detailed explanation on how to use this function, click **Help** in the **Import Records** dialog box.

## Selecting Records

There are several ways to select records:

- To make a contiguous selection with the mouse, click the first item to select. Next, press and hold the SHIFT key, then click the last item to select. All items between and including the first item and the last item will be selected.
- To make a noncontiguous selection with the mouse, press and hold the CTRL key. Click any item you want to add to the selection.

- To select records using the keyboard, click the record you would like selected, then press the spacebar.

Selected records are flagged with a green checkmark.

**Tip:** Selecting records in the Phone Book, used with the **Copy from Phone Book** function, provides a convenient means of carrying out a fax broadcast.

### Using the Phone Book for Dialing

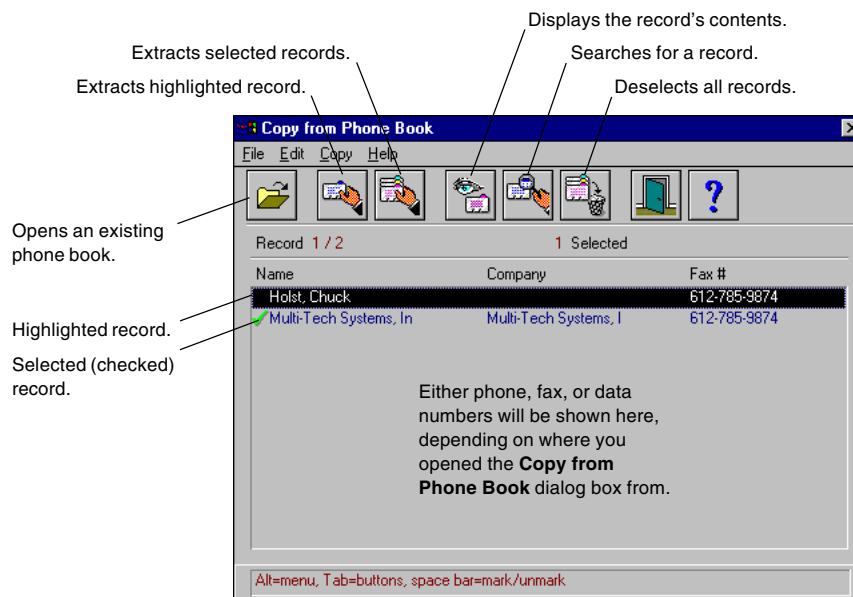
Once a recipient has been entered into the Phone Book, you can use the **Copy from Phone Book** button in any dialog box that requires you to fill in the recipients fields. The **Copy from Phone Book** dialog box is then displayed:



This button extracts the *highlighted* record and copies the information to the transmission window where the request came from.



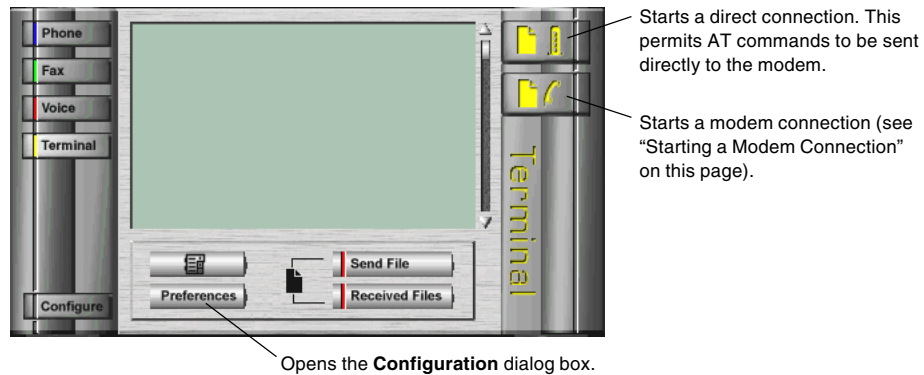
This button extracts the *selected* records and copies the information to the transmission window where the request came from. The records should have been previously selected in the Phone Book.




If the request comes from the **Send Fax** dialog box, and a cover page is used, the recipients' names and fax numbers are automatically added to the cover page.

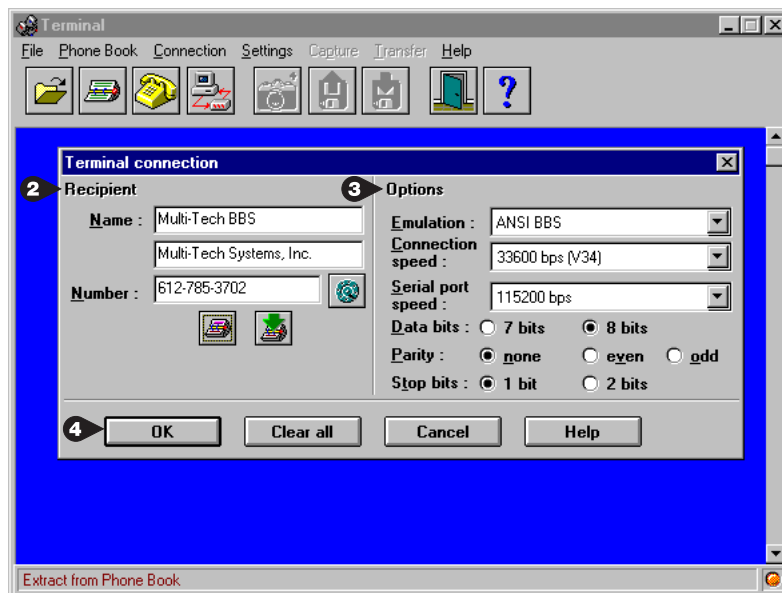
## Terminal Emulation Module

Using the Terminal Emulation module, you can connect to computers and online services to retrieve information, send and receive electronic mail, and upload and download data files.




### Starting a Modem Connection

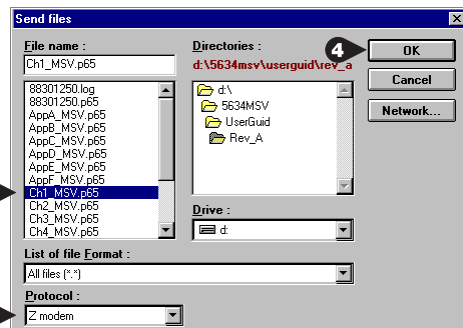
1. Click  in the Terminal main window to access the **Terminal connection** dialog box.
2. Enter the phone number of the server you want to connect to, or extract it from the Phone Book.
3. Select the options to use for the connection.
4. Click **OK**. A call progress screen is displayed.



### Uploading Files to a Remote System


This function can be accessed only during a modem connection.

1. Click  to display the **Send files** dialog box.
2. Select the file that you want to send.
3. Select the file transfer protocol.
4. Click **OK** to begin the transfer.




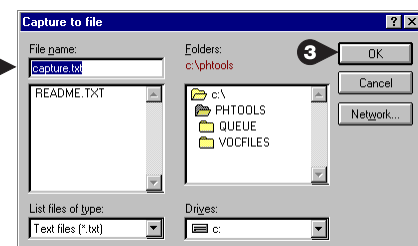
### Capturing Information to Disk

This function enables you to capture ASCII text that you exchange with a remote system and save it to disk as a text file.

1. Click  to display the **Capture to file** dialog box.
2. Specify the file name and location where you want to store the text.
3. Click **OK** to start capturing your session.

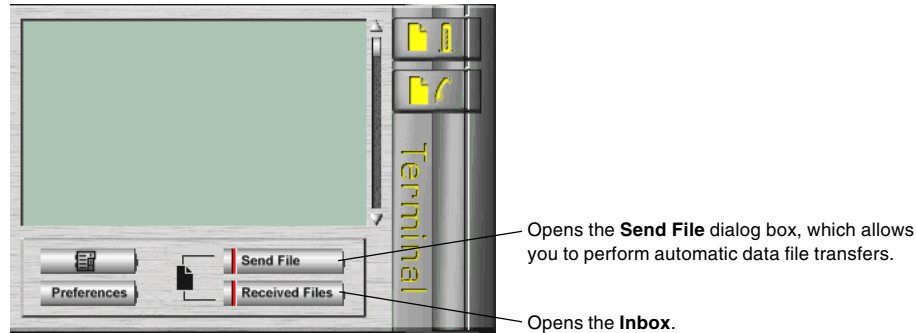
While capture is on, all text information exchanged with the remote system is saved in the text file.

4. To stop capturing to the file, click  again.



## Data File Transfer

PhoneTools' file transfer feature lets you automatically send and receive data files using the Kermit, Xmodem, Ymodem, or Zmodem protocol at the maximum speed supported by the modems at both ends.



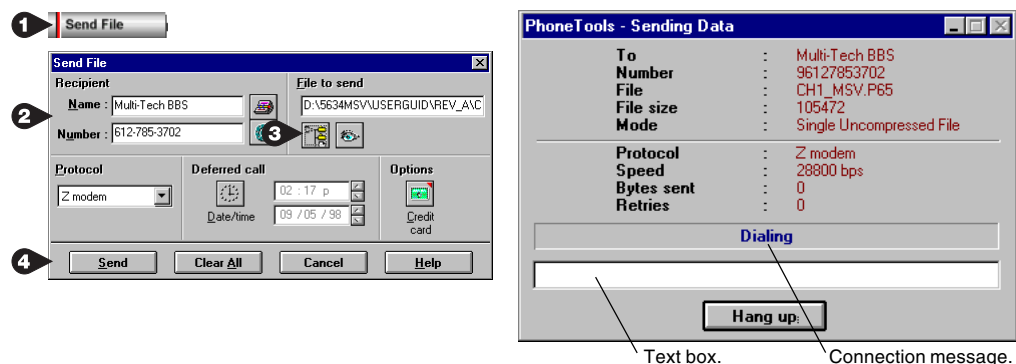
### Sending a Data File Automatically

1. From PhoneTools' main window, click to display the **Send File** dialog box.
2. Type the name and number in the **Recipients** section, or extract them from the Phone Book by clicking .
3. In the **File to send** section, click the **Browse** button to select the file to be sent.

Several transmission options are available. To enable an option, click the corresponding button:

- Defer call to a later date/time.
- Phone card dialing (must be set up in the **General Configuration**)

4. Click **Send** to start the transmission.



Sometimes you must log on before transmitting a data file. If this is the case, when the **Sending Data** window opens and displays *Connected*, you may type a message (10s), click **OK** to access the text box. There you can type any text needed to log in to the remote computer.

The file is transmitted automatically. If the recipient uses PhoneTools, the file is added to the PhoneTools Inbox. If not, then the recipient should prepare his communications application to receive using the Zmodem protocol.


If you want to send more than one file in the same transmission, you should use an archiving utility to “zip” them into one file. This will permit more than one file to be sent while reducing transmission time.

### ***Receiving a Data File Automatically***

Receive mode, speed, and protocol are set in the **Communications** tab of the **General Configuration** dialog box. To receive data files automatically, you should either:

- set **Reception Mode** to **Data**, in which case PhoneTools will only be able to interpret data transmissions, while fax transmissions will not be processed; or
- set **Reception Mode** to **Auto Voice/Fax/Data** so that PhoneTools will automatically interpret and process the incoming call.

**Protocol** is the default file transfer protocol used for incoming data transmissions. Zmodem, the default selection, is the most popular file transfer protocol.

To access received data files, click .





***Appendixes***

# Appendix A: Regulatory Compliance

## FCC Part 68 Telecom

1. This equipment complies with part 68 of the Federal Communications Commission Rules. On the outside surface of this equipment is a label that contains, among other information, the FCC registration number. This information must be provided to the telephone company.
2. The suitable USOC jack (Universal Service Order Code connecting arrangement) for this equipment is shown below. If applicable, the facility interface codes (FIC) and service order codes (SOC) are shown.
3. An FCC-compliant telephone cord and modular plug is provided with this equipment. This equipment is designed to be connected to the telephone network or premises wiring using a compatible modular jack that is Part 68 compliant. See installation instructions for details.
4. The ringer equivalence number (REN) is used to determine the number of devices that may be connected to the telephone line. Excessive RENs on the telephone line may result in the device not ringing in response to an incoming call. In most, but not all, areas the sum of the RENs should not exceed 5.0. To be certain of the number of devices that may be connected to the line, as determined by the total RENs, contact the local telephone company.
5. If this equipment causes harm to the telephone network, the telephone company will notify you in advance that temporary discontinuance of service may be required. But if advance notice is not practical, the telephone company will notify you as soon as possible. Also, you will be advised of your right to file a complaint with the FCC if you believe it is necessary.
6. The telephone company may make changes in its facilities, equipment, operations, or procedures that could affect the operation of the equipment. If this happens, the telephone company will provide advance notice in order for you to make necessary modifications in order to maintain uninterrupted service.
7. If trouble is experienced with this equipment (the model of which is indicated below) please contact Multi-Tech Systems, Inc. at the address shown below for details of how to have repairs made. If the trouble is causing harm to the telephone network, the telephone company may request you remove the equipment from the network until the problem is resolved.
8. No repairs are to be made by you. Repairs are to be made only by Multi-Tech Systems or its licensees. Unauthorized repairs void registration and warranty.
9. This equipment should not be used on party lines or coin lines.
10. If so required, this equipment is hearing-aid compatible.

Manufacturer:	Multi-Tech Systems, Inc.
Trade Name	MessageSaver
Model Number:	MT5634MSV
FCC Registration No:	AU7USA-24713-M5-E
Ringer Equivalence:	0.3B
Modular Jack (USOC):	RJ11C or RJ11W (single line)
Service Center in USA:	Multi-Tech Systems, Inc. 2205 Woodale Drive Mounds View, MN 55112 (612) 785-3500 (612) 785-9874 Fax

## **Fax Branding Statement**

The Telephone Consumer Protection Act of 1991 makes it unlawful for any person to use a computer or other electronic device, including fax machines, to send any message unless such message clearly contains the following information:

- Date and time the message is sent
- Identification of the business or other entity, or other individual sending the message
- Telephone number of the sending machine or such business, other entity, or individual

This information is to appear in a margin at the top or bottom of each transmitted page or on the first page of the transmission. (Adding this information in the margin is referred to as *fax branding*.)

Since any number of fax software packages can be used with this product, the user must refer to the fax software manual for setup details. Typically the fax branding information must be entered via the configuration menu of the software.

## Canadian Limitations Notice

**Notice:** The ringer equivalence number (REN) assigned to each terminal device provides an indication of the maximum number of terminals allowed to be connected to a telephone interface. The termination on an interface may consist of any combination of devices subject only to the requirement that the sum of the ringer equivalence numbers of all the devices does not exceed 5.

**Notice:** The Industry Canada label identifies certificated equipment. This certification means that the equipment meets certain telecommunications network protective, operational and safety requirements. The Industry Canada label does not guarantee the equipment will operate to the user's satisfaction.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations. Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier. Any repairs or alterations made by the user to this equipment or equipment malfunctions may give the telecommunications company cause to request the user to disconnect the equipment.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

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**Caution:** Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician, as appropriate.

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## International Modem Restrictions


Some dialing and answering defaults and restrictions may vary for international modems. Changing settings may cause a modem to become non-compliant with national telecom requirements in specific countries. Also note that some software packages may have features or lack restrictions that may cause the modem to become non-compliant.

## Commission Decision CTR21

The equipment has been approved to Commission Decision CTR21 for pan-European single terminal connection to the public switched telephone network (PSTN). However, due to differences between the individual PSTNs provided in different countries, the approval does not, of itself, give an unconditional assurance of successful operation on every PSTN network termination point. In the event of problems, you should contact your equipment supplier in the first instance.

This equipment is designed to work with PSTN networks that accept analog signals. Multi-Tech does not currently know of any interoperating difficulties

## EMC and Safety Compliance

 The CE mark is affixed to the enclosed MultiTech product to confirm compliance with the following European Community Directives:

- Council Directive 89/336/EEC of 3 May 1989 on the approximation of the laws of Member States relating to electromagnetic compatibility;  
and
- Council Directive 73/23/EEC of 19 February 1973 on the harmonization of the laws of Member States relating to electrical equipment designed for use within certain voltage limits;  
and
- Council Directive 98/13/EC of 12 March 1998 on the approximation of the laws of Member States concerning telecommunications terminal and Satellite earth station equipment.

## New Zealand Telecom Warning Notice

Use of pulse dialing, when this equipment is connected to the same line as other equipment, may give rise to 'bell tinkle' or noise and may also cause a false answer condition. Should such problems occur, the user should NOT contact the Telecom Faults Service.

The preferred method of dialing is to use DTMF tones, as this is faster than pulse (decadic) dialing and is readily available on almost all New Zealand telephone exchanges.

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**Warning Notice:** No '111' or other calls can be made from this device during a mains power failure.

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# Appendix B: Technical Specifications

Your MessageSaver modem meets the following specifications:

<i>Trade Name</i>	MessageSaver™
<i>Model Number</i>	MT5634MSV
<i>Client-to-Server Data Rates</i>	V.90 or K56flex speeds when accessing an ISP type V.90 or K56flex server (actual speed depends on server capabilities and line conditions) *
<i>Client-to-Client Data Rates</i>	33,600, 31,200, 28,800, 26,400, 24,000, 21,600, 19,200, 16,800, 14,400, 12,000, 9600, 7200, 4800, 2400, 1200, 0-300 bps
<i>Fax Data Rates</i>	14,400, 9600, 7200, 4800, 2400, 300 bps
<i>Data Format</i>	Serial, binary, asynchronous
<i>Modem Compatibility</i>	ITU-T V.90; K56flex; ITU-T V.34 enhanced, V.32bis, V.32, V.22bis, V.22; Bell 212A and 103/113; ITU-T V.29, V.42, V.42bis; ITU-T V.21 & V.23 in international versions
<i>Fax Compatibility</i>	ITU-T Group 3, Class 1 and 2, T.4, T.30, V.21, V.27ter, V.29, V.17, and TIA/EIA TR29.2
<i>Voice Compatibility</i>	TIA/EIA IS-101
<i>Video Compatibility</i>	ITU-T V.80 for H.324 video conferencing
<i>Error Correction</i>	ITU-T V.42 (LAP-M or MNP 3-4)
<i>Data Compression</i>	ITU-T V.42bis (4:1 throughput), MNP 5 (2:1 throughput)
<i>Speed Conversion</i>	Serial port data rates adjustable to 300, 1200, 2400, 4800, 9600, 19,200, 38,400, 57,600, 115,200, and 230,400 bps
<i>Mode of Operation</i>	Fax online modes; full duplex over dial-up lines; AT and AT+V command modes supporting answering machine and voice mail functions
<i>Flow Control</i>	XON/XOFF (software), RTS/CTS (hardware)
<i>Intelligent Features</i>	Plug and play; fully AT command compatible; autodial, redial, repeat dial; pulse or tone dial; dial pauses; auto answer; caller ID; EIA extended automode; adaptive line probing; automatic symbol and carrier frequency during start-up, retrain, and rate renegotiation; DTMF detection; call status display, auto-parity and data rate selections; keyboard-controlled modem options; non-volatile memory; on-screen displays for modem option parameters; command lines of up to 40 characters each; help menus; remote configuration; DTR dialing; callback security; 11-bit support.
<i>Command Buffer</i>	40 characters

\*Though this modem is capable of 56K bps download performance, line impairments, public telephone infrastructure and other external technological factors currently prevent maximum 56K bps connections.

<i>Data Modulation</i>	FSK at 300 bps, PSK at 1200 bps, QAM at 2400, 4800, and 9600 bps (non-trellis), QAM with trellis-coded modulation (TCM) at 9600, 12,000, 14,400, 16,800, 19,200, 21,600, 24,000, 26,400, 28,800, 31,200, 33,600, and 56,000 bps
<i>Fax Modulation</i>	V.21 CH2 FSK at 300 bps (half duplex) V.27ter DPSK at 4800 and 2400 bps V.29 QAM at 9600 and 7200 bps V.17TCM at 14400, 12000, 9600, and 7200 bps
<i>Carrier Frequencies ITU-T V.34</i>	1600, 1646, 1680, 1800, 1829, 1867, 1920, 1959, 2000 Hz
<i>Carrier Frequencies ITU-T V.32bis/V.32</i>	1800 Hz
<i>Carrier Frequencies V.22bis/V.22 or Bell 212A Standard (2400 &amp; 1200 bps)</i>	Transmit originate: 1200 Hz Transmit answer: 2400 Hz Receive originate: 2400 Hz Receive answer: 1200 Hz
<i>Carrier Frequencies ITU-T V.23 (1200 bps)</i>	Transmit originate: 390 Hz mark 450 Hz space Receive originate: 1300 Hz mark 2100 Hz space Transmit answer: 1300 Hz mark 2100 Hz space Receive answer: 390 Hz mark 450 Hz space
<i>Carrier Frequencies ITU-T V.21 (0–300 bps)</i>	Transmit originate: 980 Hz mark 1180 Hz space Receive originate: 1650 Hz mark 1850 Hz space Transmit answer: 1650 Hz mark 1850 Hz space Receive answer: 980 Hz mark 1180 Hz space
<i>Carrier Frequencies Bell 103/113 (0–300 bps)</i>	Transmit originate: 1270 Hz mark 1070 Hz space Receive originate: 2225 Hz mark 2025 Hz space Transmit answer: 2225 Hz mark 2025 Hz space Receive answer: 1270 Hz mark 1070 Hz space
<i>Fax Carrier Frequencies</i>	V.21 Ch2 (half duplex): 1650 Hz mark, 1850 Hz space for transmit originate 1650 Hz mark, 1850 Hz space for transmit answer V.27ter: 1800 Hz originate/answer V.29 QAM: 1800 Hz originate/answer V.17 TCM: 1800 Hz originate/answer
<i>Transmit Level</i>	-11 dBm (dial-up)



<i>Frequency Stability</i>	±0.01%
<i>Receiver Sensitivity</i>	-43 dBm under worst-case conditions
<i>AGC Dynamic Range</i>	43 dB
<i>Interface</i>	EIA RS-232C/ITU-T V.24/V.28
<i>Connectors</i>	DB25 RS-232C connector; two RJ-11 phone jacks, power jack; 1/8-inch stereo speaker jack and microphone jack.
<i>Cables</i>	One 14-foot RJ-11 phone cable (USA); country-specific cord for UK and International models; external power transformer and cord
<hr/> <b>Note:</b> Any cables connected to the computer should be shielded to reduce interference. <hr/>	
<i>Diagnostics</i>	Power-on self test, local analog loop, local digital loop, remote digital loop.
<i>Indicators</i>	LEDs for Transmit Data, Receive Data, Carrier Detect, 56K bps, 33.6K bps, 14.4K bps, Off Hook, Terminal Ready, Error Correction, Fax.
<i>Speaker</i>	Command-controlled 2-inch speaker for call progress monitoring and message playback.
<i>Manual Control</i>	Seven front panel membrane pushbuttons
<i>Environmental</i>	Temperature range 0°–50°C (32°–120°F); humidity range 20–90% (non-condensing)
<i>Power Requirements</i>	100–130VAC, 50/60 Hz, 5 W; two-prong outlet-mounted transformer (included); 230V/50 Hz optional (international)
<i>Power Consumption</i>	9 VDC, 300 mA maximum transformer output
<i>Dimensions</i>	10.8 cm wide x 14.8 cm long x 2.9 cm high (4.25" x 5.8" x 1.15")
<i>Weight</i>	224 g (8 oz)
<i>Limited Warranty</i>	10 years in the U.S.A., U.K., Canada, and Mexico; 5 years elsewhere



# Appendix C: Loopback Tests

## Introduction

Each time you turn on your modem, it performs an automatic self-test to ensure proper operation. Your modem also has three diagnostic tests: local analog loopback, remote digital loopback, and local digital loopback. These ITU-T V.54 loopback tests isolate telephone circuit and transmission problems.

In a loopback test, data from your computer loops through the circuits of your modem and/or a remote modem before it appears on your monitor. When the loop has been completed, the data on your PC's monitor should match the original data.

The local analog loopback test allows you to verify that the modem's transmitter and receiver circuits are functioning properly.

The local digital loopback allows you to verify that the local computer or terminal, the two modems, and the transmission line between them are functioning properly.

The remote digital loopback test allows you to verify that the remote computer or terminal, the remote modem, the serial ports, the telephone line, and the local modem are functioning properly.

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**Note:** All loopback tests operate at all speeds except 300 bps.

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## Local Analog Loopback Test (V.54 Loop 3)

In this test, data from your computer or terminal is sent to your modem's transmitter, converted into analog form, looped back to the modem's receiver, converted into digital form, and then sent to your monitor for verification. No connection to the phone line is required.

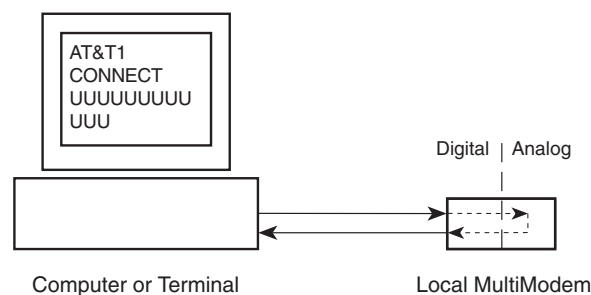


Figure C-1. Local analog loopback test.

### Test procedure

1. Connect the modem to your computer. Using your communication program, set the desired baud rate and go into terminal mode.

2. Type **AT&T1** and press ENTER. This places your modem in analog loopback mode in the originate mode. A *CONNECT* message should appear on your display. The modem is now out of command mode and in a pseudo-online mode.
3. Note that the CD LED is on. If you are set for 14,400 bps or higher, a speed LED should be on. If the CD LED is not on, there is a defect in your modem.
4. Enter characters from your keyboard. For this test, typing multiple uppercase *U* characters is a good way to send an alternating test pattern of binary ones and zeros. The characters entered should be displayed on your monitor. The TD and RD LEDs should flash when a character is entered.
5. To exit the test, type the escape sequence **+++AT** and press ENTER. This puts the modem in online command mode. Then type either **AT&T** or **ATH** to return to command mode.
6. Your modem passes this test if the data received on your monitor are the same as the data entered from your keyboard. If different data appear on your monitor, your modem is probably causing the problem, though it could also be your computer. If your modem passes this test, but you are receiving errors while on line, the remote modem or the phone line could be at fault.

## Remote Digital Loopback Test (V.54 Loop 2)

The remote digital loopback test tests the phone lines and the circuits of both your modem and a remote modem. In this test, your modem must be on line with another modem that is set up to respond to a request for remote digital loopback. (Note that some modems might not support remote digital loopback or might have it disabled.) Data from your computer or terminal is transmitted through your modem and over the phone line to the remote modem, where it is then looped back to your modem.

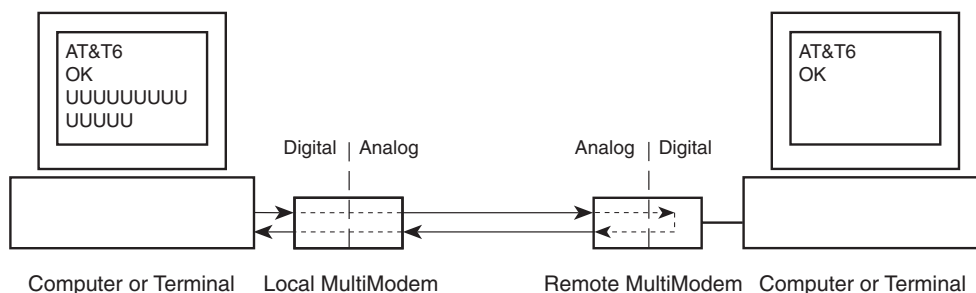


Figure C-2. Remote digital loopback test.

### Test procedure

1. Arrange to have **&T6** set on the remote test modem.
2. Open your communications software and go into terminal mode. Type **AT** and press ENTER; you should get an *OK* message. Type **AT\N** and press ENTER to disable error correction.
3. Dial the remote modem and establish your online connection.

4. Type the escape sequence `+++AT` and press ENTER to bring your modem into online command mode.
5. Type `AT&T6` and press ENTER. The local modem responds to this command by transmitting an unscrambled marking signal, which causes the remote modem to place itself in digital loopback mode. Then the local modem exits online command mode and enters data mode.
6. Enter data from your keyboard. For this test, typing multiple uppercase *U* characters is a good way to send an alternating test pattern of binary ones and zeroes. Data received by the remote modem enters its analog receiver, is converted to digital data, is reconverted into analog, and then is transmitted back to your modem. Your modem passes this test if the data received on your monitor is the same as the data entered from your keyboard.
7. To exit the test, type the escape sequence `+++AT` and press ENTER. This puts the modem in online command mode. The modem should respond with an *OK* message. If you wish to stay on line with the remote modem for normal data transmission, type `AT&T` and press ENTER to exit the test, then type `ATO` and press ENTER to return on line. If you wish to terminate the call, type `ATH` and press ENTER to hang up.

## Local Digital Loopback Test (V.54 Loop 2)

The local digital loopback test is identical to the remote digital loopback test with one exception. Instead of using your modem to signal a remote modem to place itself in digital loopback mode, your modem is placed in digital loopback mode while the remote modem is not. Data is entered and transmitted from the remote modem, sent across the phone line to your modem, and looped back to the remote modem.

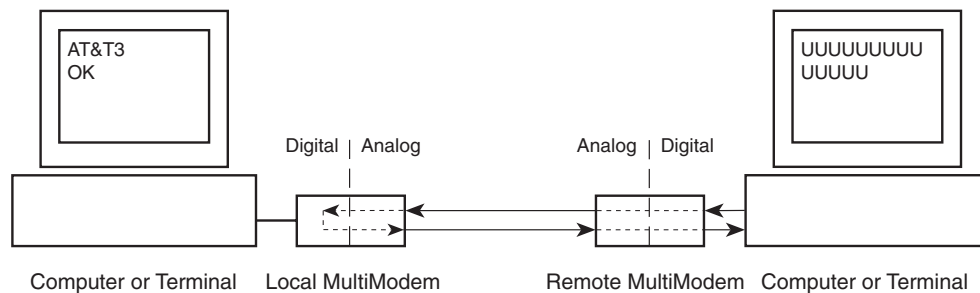


Figure C-3. Local digital loopback test

### Test procedure

1. Open your communications software and go into terminal mode. Type `AT` and press ENTER; you should get an *OK* message. Type `AT\N` and press ENTER to disable error correction.
2. Dial the remote modem and establish your online connection.
3. Type the escape sequence `+++AT` and press ENTER to bring your modem into online command mode.

4. Type **AT&T3** and press ENTER. Once you receive an *OK* message from your modem (if responses are enabled), your modem is placed in digital loopback mode.
5. Have someone enter data from the remote keyboard. For this test, typing multiple uppercase *U* characters is a good way to send an alternating test pattern of binary ones and zeros. The data received by your modem enters its analog receiver, is converted to digital data, is reconverted into analog, and then is transmitted back to the remote modem. Your modem passes this test if the data received on the remote monitor is the same as the data entered from the remote keyboard.
6. To exit the test, type the escape sequence **+++AT** and press ENTER. This puts the modem in online command mode. The modem should respond with an *OK* message. If you wish to stay on line with the remote modem for normal data transmission, type **AT&T** and press ENTER to exit the test, then type **ATO** and press ENTER to return on line. If you wish to terminate the call, type **ATH** and press ENTER to hang up.

# Appendix D: Warranty, Service, and Technical Support

## Limited Warranty

Multi-Tech Systems, Inc. (MTS) warrants that this product will be free from defects in material or workmanship for a period of ten years from the date of purchase or, if date of purchase is not provided, ten years from the date of shipment (limited to customers in the U.S., Canada, Mexico, and United Kingdom). For customers in all other countries, due to certain legal restrictions, MTS warrants that this product will be free from defects in material or workmanship for a period of five years from the date of purchase or, if date of purchase is not provided, five years from the date of shipment, unless otherwise limited or prohibited by law.

MTS MAKES NO OTHER WARRANTY, EXPRESSED OR IMPLIED, AND ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED.

This warranty does not apply to any products that have been damaged by lightning storms, water, or power surges, or that have been neglected, altered, abused, used for a purpose other than the one for which they were manufactured, repaired by the customer or any party without MTS's written authorization, or used in any manner inconsistent with MTS's instructions.

MTS's entire obligation under this warranty shall be limited (at MTS's option) to repair or replacement of any products that prove to be defective within the warranty period, or, at MTS's option, issuance of a refund of the purchase price. Defective products must be returned by Customer to MTS's factory with transportation prepaid.

MTS WILL NOT BE LIABLE FOR CONSEQUENTIAL DAMAGES AND UNDER NO CIRCUMSTANCES WILL ITS LIABILITY EXCEED THE PURCHASE PRICE FOR DEFECTIVE PRODUCTS.

## Service

If you are outside the USA, your local distributor of Multi-Tech products usually offers the quickest and most economical repair option. If necessary, you may send your modem to our Mounds View factory in the USA. A modem that is shipped to us from outside the USA must have a Returned Materials Authorization (RMA) and shipping instructions. To return a modem for repair from inside the USA, no RMA is required; simply send it to us freight prepaid. Include a description of the problem, a return shipping address, and a check or purchase order for out-of-warranty repairs.

Please send modems that require repairs to the following address:

**Multi-Tech Systems, Inc.**  
**2205 Woodale Drive**  
**Mounds View, MN 55112**  
*Attn: Repair*

If you are shipping from outside the USA, please contact our Repair Department for an RMA prior to your shipment. You can contact us by telephone at +612 785-3500 or by fax at +612 785-9874.

## Technical Support

Multi-Tech Systems has an excellent staff of technical support personnel available to help you get the most out of your Multi-Tech product. If you have any questions about the operation of this unit, please call 800 972-2439 (USA and Canada) or 612 785-3500 (international and local). Please have modem information available. You can also contact Technical Support via the following URL:

[http://www.multitech.com/\\_forms/email\\_tech\\_support.htm](http://www.multitech.com/_forms/email_tech_support.htm).

## Online Warranty Registration

If you have access to the World Wide Web, you can register your Multi-Tech product online at the following URL:

<http://www.multitech.com/register/>

## The Multi-Tech BBS

For customers who do not have Internet access, Multi-Tech maintains a bulletin board system (BBS) that mirrors its FTP site. Information available from the BBS includes new product information, product upgrade files, and problem-solving tips. The phone number for the Multi-Tech BBS is 800 392-2432 (USA and Canada) or 612 785-3702 (international and local).

The BBS can be accessed by any asynchronous modem operating at 1200 bps to 33,600 bps at a setting of 8 bits, no parity, and 1 stop bit (8-N-1).

### **To Log on to the Multi-Tech BBS**

1. Set your communications program to **8-N-1**.
2. Dial our BBS at 800 392-2432 (USA and Canada) or 612 785-3702 (international and local).
3. At the prompts, type your first name, last name, and password; then press ENTER. If you are a first time caller, the BBS asks if your name is spelled correctly. If you answer yes, a questionnaire appears. You must complete the questionnaire to use the BBS on your first call.
4. Press ENTER until the Main Menu appears. From the Main Menu you have access to two areas: the Files Menu and News. For help on menu commands, type ?.

### **To Download a File**

#### **If you know the file name**

1. From the Main Menu, type **F** to access the Files Menu, then type **D**.
2. Enter the name of the file you wish to download from the BBS.
3. If a password is required, enter the password.
4. Select a file transfer protocol by typing the indicated letter, such as **Z** for Zmodem (the recommended protocol).



5. If you select Zmodem, the transfer will begin automatically. If you select another protocol, you may have to initiate the transfer yourself. (In most datacomm programs, the PAGE DOWN key initiates the download.)
6. When the download is complete, press ENTER to return to the File Menu.
7. To exit the BBS, type **G** and press ENTER.

### If you don't know the file name

1. From the Main Menu, type **F** to access the Files Menu. For a list of file areas, type **L**, press ENTER, then type **L** and press ENTER again. (If you do not type the second **L**, you will list all of the files on the BBS.)
2. Mark each file area you would like to examine by typing its list number and pressing ENTER.
3. Enter **L** to list all the files in the selected file areas. Enter **C** to go forward in the file list and **P** to go back.
4. To mark one or more files for download, type **M**, press ENTER, type the list numbers of the files, and press ENTER again.
5. Enter **D**. You will see a list of the files you have marked. Enter **E** if you would like to edit the list; otherwise enter **D** again to start the download process.
6. Select a file transfer protocol by typing the indicated letter, such as **Z** for Zmodem (the recommended protocol).
7. If you select Zmodem, the file will transfer automatically. If you select another protocol, you may have to initiate the transfer yourself. (In most data communications programs, the PAGE DOWN key initiates the download.)
8. When the download is complete, press ENTER to return to the File Menu.
9. To exit the BBS, type **G** and press ENTER.

## About the Internet

Multi-Tech is a commercial provider on the Internet. Multi-Tech has a Web site at

<http://www.multitech.com>

and an ftp site at

<ftp://ftp.multitech.com>

To receive support via the Web, contact Technical Support at

[http://www.multitech.com/\\_forms/email\\_tech\\_support.htm](http://www.multitech.com/_forms/email_tech_support.htm)

## Modem Accessories

SupplyNet, Inc., can supply you with replacement transformers, cables and connectors for select Multi-Tech products. You can place an order with SupplyNet via mail, phone, fax or the Internet at the following addresses:

Mail: SupplyNet, Inc.  
614 Corporate Way  
Valley Cottage, NY 10989

Phone: (800) 826-0279

Fax: (914) 267-2420

Email: [info@thesupplynet.com](mailto:info@thesupplynet.com)

Internet: <http://www.thesupplynet.com>

### SupplyNet Online Ordering Instructions

1. Browse to <http://www.thesupplynet.com>. In the **Browse by Manufacturer** list, select **Multi-Tech**, and then click .
2. To order, type the quantity, and then click .
3. To change your order, click .
4. When you have finished selecting your items, click  to finalize the order. The SupplyNet site uses Verisign's Secure Socket Layer (SSL) technology to ensure complete shopping security.

## About the Multi-Tech Fax-Back Service

Multi-Tech's fax-back system provides 24-hour access to sales, marketing, and technical literature for customers in the U.S.A. Dial (612) 717-5888, follow the voice prompts, and enter the document number for either the Sales and Marketing catalog or the Technical Support catalog of documents. For convenience, write your fax number in the following space: \_\_\_\_\_.

From the Sales and Marketing catalog, you can request to have newsletters, white papers, press releases, brochures, and other marketing literature faxed to you. From the the Technical Support catalog, you can request basic modem operation information and troubleshooting guides. With either catalog, simply enter the FB Doc. number of the literature you wish to receive.

# Appendix E: Upgrade Procedures

## Introduction

Your modem is controlled by semi-permanent software, called *firmware*, that is stored in flash memory. Firmware is nonvolatile; that is, it remains stored in memory when the modem is turned off. However, it can be changed by either the manufacturer or the user as bugs are fixed or new features are added.

Since the firmware in your modem is stored in flash memory, you can upgrade it yourself in a few minutes by using the following procedures.

## Upgrade Overview

The upgrade procedure consists of the following steps, which are described in greater detail in the following sections.

1. Identify the model number and firmware version of your modem.
2. Identify the current version of the firmware at the Multi-Tech Web site or BBS. If your modem already has the current firmware, there is no need to update it.
3. Download the upgrade file for your modem.
4. Extract the firmware .HEX file and flash upgrade program from the file you downloaded.
5. Document and clear your stored parameters.
6. Upgrade the modem's firmware using the .HEX file and flash upgrade program.
7. Restore your parameters.

## Step 1: Identify the Modem Firmware

You must know the model number and firmware version of your Multi-Tech modem to know whether you should update it.

1. Run your favorite terminal program. If you are using Windows 95 or Windows NT, you can use HyperTerminal. If you are using Windows 3.11, you can use Windows Terminal.
2. In the program's terminal window, type **AT&F**. Even if you cannot see the **AT&F** command on your screen, be sure to type it completely and then press ENTER.
3. Now type **ATI** and record your results. The model number and firmware version should appear similar to that shown below.

```
LT V.90 1.0 MT5634MSV Serial Data/Fax/Voice Modem Version  
4.15c
```

## **Step 2: Identify the Current Firmware Version**

Identify the current version of the firmware at the Multi-Tech Web site or BBS. If your modem already has the current firmware, there is no need to update it.

### **Multi-Tech Web Site**

1. Using your favorite Web browser, go to <http://www.multitech.com/support/firmware/>.
2. Scroll down to the table with your modem model number (non-USA firmware must be obtained directly from the [ftp site](#) or BBS at this time).
3. Look at the Current Revision number for your modem.
4. If the Current Revision number matches the firmware version number found in "Step 1: Identify the Modem Firmware," your modem has the current firmware version and does not need to be updated.
5. If the Current Revision number is larger than the firmware version number found in "Step 1: Identify the Modem Firmware," your modem has an older firmware version. Continue with "Step 3: Download the Upgrade File."

### **Multi-Tech BBS**

1. Run your favorite terminal program and dial in to the Multi-Tech BBS at 800-392-2432 (North America) or 612-785-3702 (local and international). If you followed the download test in the "Quick Start" chapter, your terminal program should already be configured for the Multi-Tech BBS.
2. When the BBS welcome screen appears, type your first name, last name, and password following the prompts. If you are a first-time caller, the BBS asks if your name is spelled correctly. If you answer **Y**, a questionnaire appears. You must complete the questionnaire to use the BBS on your first call.
3. Press **ENTER** until the main menu appears. From the main menu you have access to two areas: the Files Menu and News. For help with menu commands, type **?**.
4. In the Main Menu, type **F** and press **ENTER** to access the Files Menu.
5. In the Files Menu, type **L** and press **ENTER**, then type **L** and press **ENTER** again. A two-column list of file areas appears.
6. Press **ENTER** until the modem firmware area for your country is listed.
7. Type the number of the modem firmware area for your country and press **ENTER**.
8. Type **L** and press **ENTER** to list the files in the selected area.
9. Press **ENTER** until your modem model number appears.
10. Look at the version number for your modem.
11. If the version number matches the firmware version number found in "Step 1: Identify the Modem Firmware," your modem has the current firmware version and does not need to be updated.
12. If the version number is larger than the firmware version number found in "Step 1: Identify the Modem Firmware," your modem has an older firmware version. Continue with "Step 3: Download the Upgrade File."

## Step 3: Download the Upgrade File

### *Multi-Tech Web Site*

1. If you are not already at the Firmware page of the Multi-Tech Web site, follow the procedure in "Step 2: Identify the Current Firmware."
2. Click on the upgrade file name for your modem and save the file to a temporary location on your hard disk.

### *Multi-Tech BBS*

1. If you have not already found the upgrade file for your modem on the Multi-Tech BBS, follow the procedure in "Step 2: Identify the Current Firmware."
2. Type the number of the upgrade file for your modem and press ENTER.
3. Type **D** and press ENTER to list the file to be downloaded.
4. If the correct file is listed, press ENTER; otherwise use the **Q** command to return to the previous menu.
5. Type **Z** and press ENTER to select the Zmodem transfer protocol.
6. The download begins automatically. As the file is copied to your hard disk, a dialog box reports on the progress of the download.
7. To log off the BBS, press ENTER, type **G** for "good-bye," and press ENTER twice more.

## Step 4: Extract the Upgrade Files

1. Move the downloaded upgrade file to a temporary directory or folder on your hard disk.
2. The file is a self-extracting archive. Extract the files by typing the upgrade file name in DOS or double-clicking it in Windows. The extracted files include a .HEX file, which contains the upgrade data, and Flash Loader, a flash program for Windows 95/98 and Windows NT 4.0.

## Step 5: Clear Your Stored Parameters

Before you flash your modem it is important that you issue the **AT&W1Z** command to it to clear out any stored parameters. You should also record the parameters that are currently stored in your modem so you can reprogram it after flashing.

1. Run your favorite terminal program. If you are using Windows 95 or Windows NT, you can use HyperTerminal. If you are using Windows 3.11, you can use Windows Terminal.
2. In the program's terminal window, type **AT&V** and press ENTER to list your modem's current parameters.
3. Record your parameters by saving the screens and sending them to your printer.

4. Type **AT&W1Z** and press ENTER to clear your stored parameters and reset your modem to factory default.
5. Close the terminal program.

### Step 6: Upgrade the Modem's Firmware

1. Run Flash Loader by double-clicking the FLASH.EXE icon.  
Flashloader automatically finds the COM port your modem is on, sets the serial port speed, and opens a **Choose File to Download** dialog box.
2. In the **Choose File to Download** dialog box, double-click the .HEX file you want to load into the modem. The file name for the MessageSaver is in the format **MSVnnnn.HEX**, where *nnnn* is the firmware revision number.  
Flash Loader upgrades the modem with the contents of the .HEX file.
3. Close Flash Loader.

### Step 7: Restore Your Parameters

Your modem is now updated. You can now open your terminal program to reprogram your modem parameters, if necessary, or to confirm the update by typing **ATI** in the terminal window.



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